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## Barr's Buffon.

### Buffon's Natural Hiftory.

CONTAINING

ATHEORY OF THE EARTH,

A GENERAL

HISTORY OF MAN,

OF THE

BRUTE CREATION,

AND OF

VEGETABLES, MINERALS, &.

FROM THE FRENCH.

With Notes by the TRANSLATOR,

IN TEN VOLUMES.

VOL. VI.

LONDON:

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BRIDGES-STREET, COVENT-GARDEN.
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#### NATURAL HISTORY.

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THE Cat is a faithless domestic, and only kept through necessity to oppose to another domestic which incommodes us still more, and which we cannot drive away; for we pay no respect to those who, being fond of all beasts, keep cats for amusement. Though these animals are gentle and frolicksome when young, yet they even then possess an innate cunning, and preverse disposition, which age increases, and which education only serves to conceal. They you. VI.

B are

are naturally inclined to theft, and the best education only converts them into fervile and flattering robbers; for they have the same address, fubtilety and inclination for mischief or rapine. Like all knaves they know how to conceal their intentions, to watch, wait, and choose opportunities for feizing their prey; to fly from punishment, and to remain away until the danger is over and they can return with fafety. They readily conform to the habits of fociety, but never acquire its manners; for of attachment they have only the appearance, as may be feen by the obliquity of their motions and duplicity of their looks. They never look in the face those who treat them best, and of whom they seem to be the most fond, but either through fear, or falfehood, they approach him by windings to feek for those careffes they have no pleasure in but only to flatter those from whom they receive them. Very different from that faithful animal the dog, whose fentiments are all directed to the person of his master, the cat appears only to feel for himself, only to love conditionally, only to partake of fociety that he may abuse it; and by this disposition he has more affinity to man than the dog, who is all fincerity. Would be sound then with the fig.

The

The form and temperament of the cat's body perfectly correspond with his disposition. He is handsome, light, adroit, cleanly, and voluptuous; he loves ease, and searches out the foftest places for rest and repose. The cat is very amorous, and what is uncommon among animals, the female appears more ardent than the male; she feeks for and invites him, and by her loud cries announces the fury of her defires, or rather the pressure of her wants; if he flies from or disdains her, she pursues, tears, and though their approaches are always accompanied with acute pain, she forces him to comply with her defires. This passion of the female continues nine or ten days, and commonly happens only twice a year, but sometimes three and even four times. They go with young 55 or 56 days, and they usually have from four to fix at a litter. As the males are apt to devour their progeny, the females commonly conceal themselves when they litter, and if suspicious of a discovery, they carry their young ones away in their mouths, and hide them in holes or inaccessible places. After fuckling them a few weeks, the old one takes them mice, or small birds, to accustom them to eat flesh. By an unaccountable caprice, however, these very mothers so very tender B 2 inod and

and careful, fometimes become fo cruel and unnatural, as to devour their offspring them-felves.

Young cats are gay, sprightly, and full of frolic, and would be very good amusement for children, if nothing was to be feared from their claws. Their play, though always light and agreeable, is never innocent, and foon turns into habitual mischief. As they can only exert their talents on small animals, they watch birds, mice, and rats, with the greatest patience, which they feize with avidity, and without being taught, become more expert hunters than the best instructed dogs. Their dispositions being naturally averse to all restraint, they are incapable of a regular education; we are, nevertheless, told that the Greek monks of Cyprus taught cats to hunt and deftroy the ferpents with which that island was infested; but perhaps this hunting was more from their natural inclination to destroy than from obedience, for they take great delight in watching, attacking, and destroying all feeble animals without diffinction, as birds, young rabbits, leverets, rats, mice, bats, moles, frogs, toads, lizards, and ferpents. They are without docility, and their fcent, which in the dog is so eminent a quality, is very indifferent, and therefore they hunt

hunt by the eye only; neither do they properly pursue, but rather lie in wait and attack the animals by surprise; and after having played with, and tormented them a long time, they kill them without any necessity, even when well fed and in no want of prey to fatisfy their appetites.

The most immediate physical cause of their inclination to feize other animals by furprife, comes from the advantage they receive from the particular conformation of their eyes. The pupil in man, and many other animals, is capable of a certain degree of contraction and dilation; it enlarges a little when the light is faint, and contracts when it becomes too ftrong; in cats and nocturnal birds, as owls, &c. this contraction and dilation is so considerable that the pupil, which in the dark is large and round, becomes in the day, long and narrow like a line; and therefore these animals see better in the night than in the day. There is a perpetual contraction in the eye of the cat during the day, and it is only by a great effort that he can fee in a strong light, whereas, in the twilight, the pupil refumes its natural form, he fees perfectly, and profits from this superiority to know, attack, and furprife his prey.

It cannot be said that cats, though living in our houses, are entirely domestic. The most familiar are not under any subjection, but rather enjoy perfect freedom, as they only do just what they please, and nothing is capable of retaining them in a place which they are inclined to desert. Besides, most of them are half wild, know not their masters, frequent other granaries, and never visit the kitchens and offices belonging to the house but when pressed to it by hunger.

Cats have less attachment to persons than to houses. When taken to the distance of a league or two they will return to their former abode of their own accord, possibly because they there know all the retreats of the mice, the outlets and paffages about the house, and because the labour of the journey back is less than it would be to acquire the fame facility in a new place. They naturally diflike water, cold, and bad fmells; they love to be in the fun, and to lie in warm places; they are very fond of perfumes, and willingly allow themselves to be taken and careffed by those who make use of them. The fcent of the valerian root has fo powerful an effect on them that it appears to transport them with pleasure: to preserve this plant in the gardens it is necessary to furround

it with a close fence, for the cats smell it at a distance, will come about it in numbers, and by rubbing and passing and repassing over it very soon destroy the plant. They do not come to their full growth in less than sisteen or eighteen months, but they are capable of engendering before the end of the first year, and they can procreate all their lives, which seldom exceeds eight or nine years; they are, notwithstanding, very lively and hardy, and more nervous than most other animals which live longer.

Cats can only chew flowly, and with difficulty; their teeth are so short, and so badly placed, that they rather serve them to tear than grind their sood, and, therefore, they always give the preserence to tender victuals; they are very fond of fish, which they will eat either raw or boiled; they drink frequently; their sleep is not sound, and they often assume the appearance of sleep for some artful design; they walk gently, and without making any noise. They are very cleanly, and as their coat is always dry their hair easily electrisies, and the sparks are seen to come from it merely by rubbing the hand across it in the dark. Their eyes also sparkle in the dark like diamonds, and seem to reflect in the night the light they may be said to have imbibed during the day.

The wild cat (fig. 50.) couples with the domestic one (fig. 51.) and consequently form but one species. It is not uncommon for both males and females to quit their houses when they are proud and go into the woods to feek wild cats, and afterwards return to their former habitations; it is for this reason that some of our domestic cats so entirely resemble the wild ones. The greatest difference between them is internally, the intestines of the domestic cat being longer than those of the wild cat, although the latter is much the largest and strongest; his lips are also always black, his ears more stiff, his tail larger, and his colour more uniform. In this country we know but one species of wild cat, and it appears from the testimony of travellers that this species is found in almost all climates without any great variety. There were some of them upon the new continent before its discovery: an huntsman carried one to Christopher Columbus, which was of the common fize, of a dark grey colour, and had a very long strong tail. There were wild ones found at Peru, but none in a tame state; as also in Canada, in the county of Illinois,

Engraved for Baris Buffen.

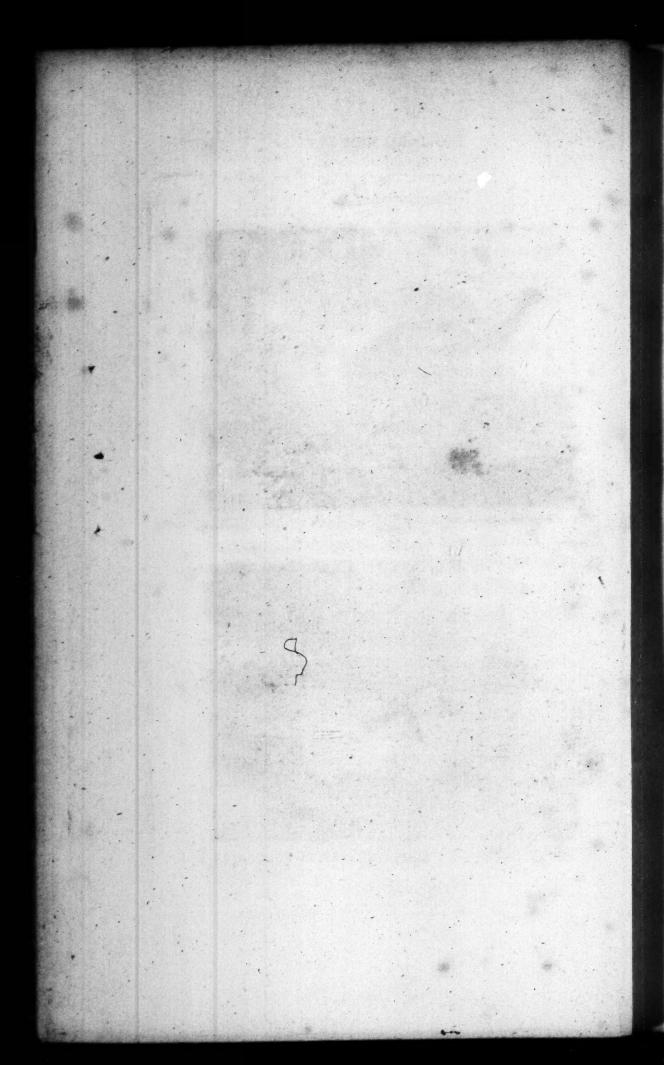


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Domestie Cat.

Published by J.L.Barr Jan. 5th 1793.



&c. They have been feen in many parts of Africa, as in Guinea, and the Gold Coast; at Madagascar, where the natives had domestic cats, and at the Cape of good Hope, where Kolbe fays, there are also, though in a small number, wild cats of a blue colour; and these blue, or rather flate-coloured cats are also found in Afia. Pietro della Valle fays, " In Persia there are cats of a species which properly belong to the province of Charazan. Their fize and form are like those of the common cat: their beauty confists in their colour, which is grey, spotless, and uniform over the whole body, except that it is darker on the back and the head, and shaded lighter on the breast and belly, until it approaches a degree of whiteness; which agreeable mixture, to use the language of the painters, forms a kind of chiaro-obscuro that has always a wonderful effect. Besides, their hair is shining, fost and delicate as silk, and so long, that, though more smooth than rough, yet it is curled, particularly under the neck: These cats are to the rest of their species, what the water-dogs are to that of the dog. The most beautiful part of their body is the tail, which is very long and covered with hair of five or fix inches in length, and which they turn up over their backs like the squirrel, and VOL. VI. the

the upper point resembles a plume of seathers. They are very tame, and the Portuguese have brought them from Persia into the Indies." From this description it appears, that, except in colour, these cats resemble those of Angora (fig. 52.) It is probable, therefore, that the cat of Chorazen, in Persia, and the cat of Angora, in Syria, are of the same race, and whose beauty proceeds from the particular influence of the climate of Syria, in the same manner as the Spanish cats (fig. 53.) which are red, white, and black, and whose hair is soft and glossy, are indebted for their beauty to the climate of Spain.

In general it may be remarked, that of all the climates of the inhabited globe, those of Spain and Syria are the most favourable to these beautiful varieties in nature. The sheep, goats, dogs, cats, rabbits, &c. of those countries, have the finest wool, the most beautiful and longest hair, and the most agreeable and most varied colours. Both hair and colours of the wild cat, like those of most other animals, are coarse; when tamed the former becomes more soft and the latter more variegated, and in the favourable climates of Chorazan and Syria, the hair become more long, fine, and copious, and the colours more delicate; the black and red

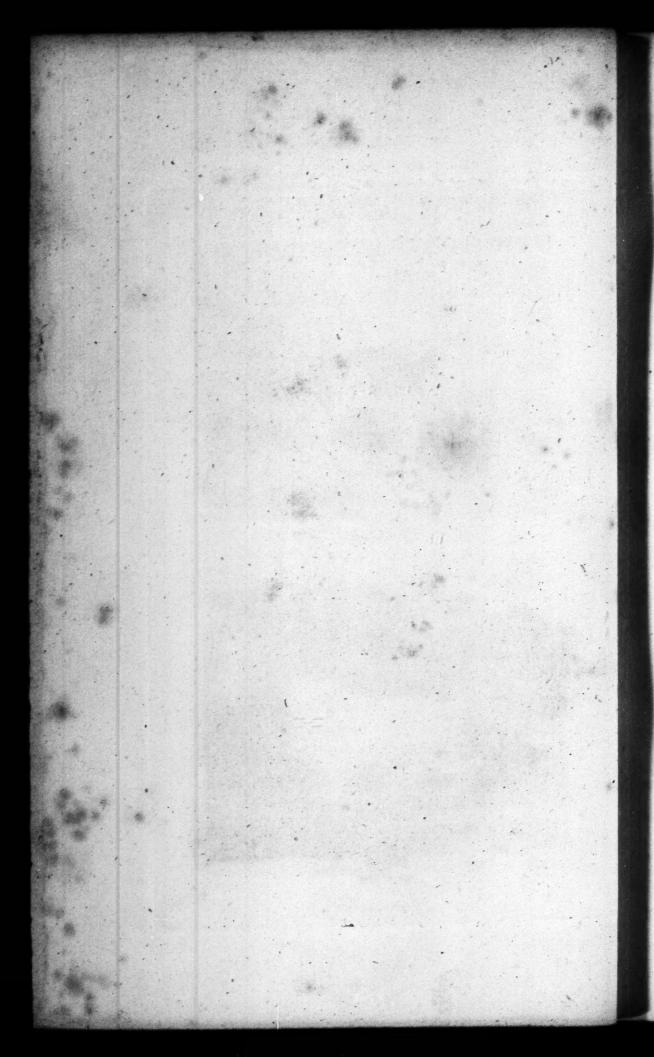
Engraved for Baris Buffon.



Fig. 52. Spanish Cat.



Published by LS. Barr, Dec. 22, 1792 ..



red change into a transparent brown, and the dark brown into an ash-coloured grey. By comparing, a wild cat of our forests with those of Chorazan we shall find their greatest difference confifts in this shaded variety of colours. As these animals have more or less white upon the belly and fides, it is eafy to conceive that to have cats entirely white and with long hair, fuch as the cats of Angora, we have only to unite those with the most white, in the fame manner as is done with rabbits, dogs, goats, stags, &c. In the Spanish cat, which is only another variety of the wild cat, the colours, instead of being weakened by uniform shades, as in the Syrian cat, become more bright; the yellow is changed into red, the brown into black, and the grey into white. These cats retain their colours and do not degenerate when transported into America. "In the Antilles, fays Father du Tertres, there are a number of cats, probably brought thither by the Spaniards; most of them have red, white, or black marks, and many of the French, after eating the flesh, send their skins to France for fale. When we came to Guadaloupe the cats were fo accustomed to feed on partridges, doves, thrushes, and small birds, that they would not deign to look upon rats; but no fooner did they ous deals

they find the game diminish than they broke their truce with the rats and fought them vigorously."

In general cats are not, like dogs, subject to degenerate when transported into warm climates. Bolman fays, "the European cats when carried into Guinea preserve their original figure the fame." Their nature, is indeed, more conflant, and as their domestic state is neither so entire, univerfal, nor perhaps fo ancient as that of the dog, it is not furprifing that they should have undergone less variation. Our domestic cats, though they differ in colour, do not form distinct and separate races; the climates of Spain and Syria having alone produced varieties which are permanent. To these might indeed be added the climate of Pe-chi-ly, in China, where there are cats with long hair and pendent ears, and of which the Chinese ladies are very fond. These domestic cats with pendent ears, of which we have descriptions, are more removed than those with ftraight ears, from the wild and primitive race.

We shall here close the history of the cat, and with it that of domestic animals; of these our number is confined to the horse, the ass, the sheep, the goat, the hog, the dog, and the cat. We add not to this list the camel, the elephant,

elephant, the rein-deer, and others, which though domestic in other countries, are not familiar to us; nor shall we enter upon the hiftory of foreign animals, till we have given that of the wild animals of our own country. Befides, as the cat may be faid to be only half domestic, he forms the shade between the real wild and real domestic animals; for among the domestic we ought not to include fuch: troublesome neighbours as rats, mice, and moles, which though inhabitants of our houses and gardens, are not less wild and unsubjected; fince instead of being attached or subservient to man, they fly from him, and in their obscure retreats, retain their manners, habits and their liberties inviolate.

In the history of each domestic animal we have seen, to what a degree the education, protection, and care of man, insluence the disposition, manners, and even the form of animals. We have seen that these causes, added to the effects of the climate, modify and change the species so as to render them very different from what they were originally, whereby there is occasioned such a diffimilarity among the individuals of the same species that we should be led to consider them as different animals, did they not produce together sertile individuals, which

which is the fole effential characteristic of every We have feen that the different races of domestic animals observe nearly the same order in the different climates with the human race; that like men they are more strong and courageous in cold countries, more civilized and mild in temperate ones, and more daftardly, feeble, ugly, and deformed, in the hot regions; that moreover it is in temperate climates, and among the most civilized nations, the greatest diversity, mixture and numerous varieties of each species are found; it is among them also that animals exhibit evident figns of the antiquity of their servitude; their pendent ears, varied colours, long and delicate hair are fo many effects produced by the length of time they have been in a domestic state. Of almost all wild animals the ears are erect. Those of the wild boar are erect and stiff, but those of the domestic hog are inclined and half pendant. Among the Laplanders, the favages of America, the Hottentots, the Negroes and other uncivilized people, all the dogs have erect ears; whereas in Spain, France, England, Turkey, Persia, China, and all other civilized countries, the generality of them have foft and pendent ears. The ears of the tame cat are not so stiff as those of the wild one; and in China, which is an empire

empire of very ancient civilization, and whose climate is very mild, there are cats with pendulous ears. It is for the fame reason that the goat of Angora, whose ears are pendent, should be confidered as the animal of his species the farthest removed from his natural state: the influence fo evident of the climate of Syria, added to the domestic state of these animals among a people civilized from great antiquity, would in process of time have produced this variety, which cannot be maintained in any other climate. The goats of Angora brought forth in France, have their ears neither fo long nor pendent as those produced in Syria, and probably would, after a certain number of generations, assume the ears and hair of the goats of that country.

#### SUPPLEMENT.

IT has been supposed that I denied the cat the power of sleeping, but this must entirely have arisen from a misconstruction of my expression for although I was not aware of their sleeping so soundly as I am now informed is sometimes the case, yet I always knew

1

knew they flept in some degree. M. Pasumot, of the Academy of Dijon, has communicated to me a letter on this subject; he says, " Although the cat fleeps feldom, it is very found, and might fometimes be confidered as a kind of lethargy. I have had at least ten instances; a favourite cat used to lay upon the feet of my bed; one night I pushed him away, but found him so immoveable that I conceived him to be dead. I pulled and toffed him about for some time before he shewed any kind of life, when at last he began to awake, but it was even then very flowly. This found fleep and difficulty of awaking cats, I have often observed; and I am acquainted with a gentleman who has also been witness of their sleeping in this found manner, and which he fays is always at the time of great heat, or previous to stormy weather."

M. de Lestrie, a merchant of Chalons, in Campagne, has remarked to me, that the breath of cats frequently exhales an odour resembling musk; particularly when they purrand are tranquil, or when suddenly alarmed and make an hissing noise, from which he inclines to conclude that there are some vessels in the breast of a cat filled with an aromatic quality; but nothing of this nature is to be discovered by anatomy.

In my former history of this animal, I remarked there were cats in China, whose ears were pendent, but as this variety is not found in any other place, it is possibly an animal of a different species; and I am led to this supposition from there being an animal called Sumxu, mentioned by travellers, which they say they can compare to nothing but the cat, which it greatly resembles. It is found among the Chinese who are extremely partial to it, both on account of its beauty, its hair being of a bright black or yellow colour, and because it readily destroys rats.

We have also another variety of cats in our own climates; as they are some produced with pencils at their ears. M. de Save writes me word, that in November, 1773, he had a young kitten brought forth at his house in Paris, very like what we have described as a Spanish cat, with pencils at her ears, although neither of the parents had them, and that in a few months they were as large in proportion to her fize as those of a Canadian Lynx. At Madagascar they have tamed some wild cats which have twisted tails, and are called Saca by the inhabitants; but they intermix with the domestic, and are of course of the same species. I have had the skin of an animal sent me from Cayenne, VOL. VI. which

which much resembles a wild cat. They call it Haïra in Guiana, and the natives there eat its sless, which is white and palatable; I therefore suspect a mistake has been made in its name, and that it is the Taïra, a small martin, of which we make mention at the latter part of this work.

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OF WILD ANIMALS.

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In the History of Man, and of Domestic Animals, we have seen Nature solely as she is constrained; we have rarely seen her perfect, often altered and deformed, and always either surrounded with shackles or loaded with extraneous ornaments. We shall now behold her decked out by simplicity alone, but more attractive by her artless beauty, by her free air, by the sprightliness of her movements, and by all the other attributes of true dignity and independence.

pendence. We shall behold her traversing the furface of the earth with fovereign fway, proportioning her domain among the animals, and dividing to each species its element, climate, and subsistence; we shall survey her in the forests, and in the plains, dictating her simple but immutable laws; imprinting upon every species her indelible characters; dispensing her gifts with equity, and counterbalancing evil with good; we shall observe her giving to fome strength, and courage accompanied with hunger and voracity; to others mildness, temperance, and agility, attended with fear, inquietude, and timidity; and to all liberty, with an uniformity of manners, and ardour in love, which they can eafily fatisfy, and is always followed by a happy fecundity.

In love and in liberty are to be found the greatest blessings which Nature has to bestow. Have those animals which we call savage, because they are not subjected to our will, need of aught more to make them happy? they nevertheless enjoy another blessing, that of living in a state of equality; they are neither the slaves nor tyrants of each other; like man, the individual has not to dread the rest of his species; they enjoy peace among themselves, and are strangers to war, but when brought on them

by other animals or men. No wonder then that they should shun the human race, steal from our view, live in folitudes remote from our habitations, employ all the refources of their instinct to provide for their fafety; and in order to exempt themselves from the power of man, that they should exert every expedient to preserve their liberty which Nature has bestowed on them, together with the defire of independence,

Some animals, and they are the most mild, innocent, and tranguil, are contented with remaining at a certain distance from us, and living in our fields; others more fierce and diftrustful, conceal themselves in the recesses of the woods: others, as if they knew there was no fafety on the furface of the earth, dig themselves subterraneous abodes, take shelter in caverns, or gain the fummits of most inacceffible mountains; and others, the most ferocious and most powerful, inhabit deserts alone, and reign like fovereigns in those burning climates, where man, as favage as themselves, is unable to dispute the empire with them,

As all beings, even the most independent, are subjected and governed by physical laws, and as brute animals, as well as man, experience the influences of the air and foil, fo it appears, that the same causes which have softened

have

tened and civilized the human species in our climates, have produced fimilar effects upon all other species. The wolf, which is perhaps the most ferocious animal in the temperate zone, is by no means fo terrible or cruel as the tiger, the panther, and the lion of the torrid zone; or as the white bear, the lynx, and the hyæna of the frozen zone. And this difference is not only general, as if Nature, to give a degree of harmony to her productions, had calculated the climate for the species, or the species for the climate, but in each particular species the climate is calculated for the manners, and the manners for the climate. In America, where the heat is less violent, and the air and soil more benign than in Africa, though under the fame line, the lion, tiger, and panther, have nothing terrible in them but the name. No longer are they the tyrants of the forests, those intrepid enemies of mankind, those monsters which delight in blood and carnage: but in America these animals usually run from before man, and even instead of waging open war against other animals, employ stratagem and artifice to take them by furprife; in a word, they may be rendered subservient and almost domestic; therefore were ferocity and cruelty the characteristic of their natures, they must

have degenerated, or rather felt the influence of the climate; under a milder sky their dispositions have been softened; every excess in them has been tempered, and by these changes they have become more conformable to the nature of the country which they inhabit.

The vegetables which cover this earth, and are more connected with it than the animal that feeds upon them, partakes in a superior degree of the nature of the climate. Every country, every degree of temperature, has its particular plants. At the foot of the Alps, we find those of France and Italy, and on their fummit those of the northern regions, which very plants we also meet with on the frozen pinnacles of the African mountains. On the fouth fide of the mountains which separate the Mogul empire from the kingdom of Cashmire, we see all the plants of the Indies, and on the other fide we are surprised to find none but those of Europe. It is from intemperate climates that we also derive drugs, perfumes, poisons, and all the plants whose qualities are excessive. The productions of temperate climates, on the contrary, are always mild. Of fuch happy fpots, herbs and roots the most wholesome, the sweetest fruits, the gentlest animals, and the most polished men, are the delightful appurtenances

purtenances. Thus the earth produces plants; the earth and plants make animals; and of the earth, plants and animals are formed men; for the qualities of vegetables, proceed immediately from the soil and air; the temperament and other relative qualities of animals which feed on herbs, have a close affinity to the particular kinds they use, and the physical qualities of men, and other animals which sublist on flesh, as well as on vegetables, depend, though more remotely, on the fame causes, whose influence extends even to disposition and manners. Size and form, which appear to be absolute and determined qualities, depend, nevertheless, like the relative qualities upon the influence of the climate. The fize of our largest animals are greatly inferior to that of the elephant, rhinoceros, or hippopotamus; our largest birds are but small if we compare them with the offrich, condor, or the cassawary; and what comparison can be made between the fishes, lizards and serpents of our regions, and the whale, the walrus, and manati, which inhabit the northern feas; or the crocodiles, large lizards, and enormous adders which infeft the fouthern climes, both by land and water? And if we confider each species in different climates, we shall find fensible varieties both in fize and figure,

figure, as we have already evinced in the hiftory of the horse, goat, hog, and dog. These changes are, however, produced but slowly and imperceptibly; the grand workman of nature is Time, and his operations are equal, uniform, and regular; he performs nothing by starts; nothing but by degrees and succession; and what he does, however imperceptible at first, becomes gradually sensible, and is, at length, marked by effects which it is impossible to mistake.

Wild and independent animals are, of all living beings, man not excepted, the least subject to changes and variations of any kind. Possessed of absolute liberty in the choice of their food and climate, their nature varies less than that of domestic animals, which we enflave, transport, mal-treat, and feed without confulting their taste. Wild animals live uniformly in the same manner; they wander not from climate to climate; their native wood is a country to which they are faithfully attached, and from which they never remove but when they feel they can no longer live in it with fecurity. When they fly it is less to avoid their natural enemies than the presence of man. Nature has supplied them with resources against other animals; with them they are on a level; they

know

know their strength, their cunning, their defigns, their haunts, and if they cannot avoid they oppose them with force to force. But how can they guard against beings who can seize without seeing, and can destroy without approaching them? It is man, therefore, who disturbs, and who disperses these wild animals, and renders them a thousand times more savage than they would otherwise be, for the generality of them require nothing but tranquility, nothing but a moderate use of the air and earth.

By Nature they are prompted to refide together, to unite in families, and to form a kind of focial intercourse. Of this intercourse we still find vestiges in countries not totally engroffed by man; we there find works atchieved in common, defigns which, without being founded on reason, seem, nevertheless, to be projected for rational convenience, and the execution of which supposes at least an union and concurrence of individuals occupied in it. Nor is it by physical force or necessity, like the ants, the bees, &c. that the beavers labour and build; unconstrained either by space, time, or number, from choice they affemble. Those that agree dwell together, and those that disagree live apart; and some from being perpetually repulsed by the body are obliged to VOL. VI. E lead

lead a solitary life. It is only in remote and defert countries, where there is little dread of the approach of man, that they endeavour to establish themselves, and render their habitations more fixed and commodious, by conftructing dwellings, or, as it were, fmall hamlets, which not unaptly represent the first efforts and feeble labours of an infant commonwealth. In countries, on the contrary, over which mankind are diffused, all society is lost among animals, all industry ceases, and every art is suppressed; they relinquish the occupation of building, and neglect every accommodation; always preffed by fear and necessity, their only study is to live, and their only employment flight and concealment; and if, as may reasonably be supposed, the whole furface of the earth should, in process of time, be equally inhabited by the human species, in a few centuries the history of a beaver would be confidered as a fable. The faculties and talents of animals, therefore. instead of encreasing are constantly diminishing, for time may be faid to oppose them. The more the human species are multiplied and improved the more the wild animals become fubjected to the dominion of an absolute tyrant, who will hardly permit their individual existence, deprives them of liberty, of every avenue

to society, and destroys the very root of their intelligence. What they are become, or what they may become, is an inadequate indication of what they have been or might be. Who can say, if the human species were annihilated, to which of the animals would the sceptre of the earth belong?

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## THE STAG, OR RED DEER.

akoleenko serota ko<del>rraakinisto s</del>eridada kadulkale. Kakoleenko saasad sek memissikko manasanheet.

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THE Stag is one of those mild, peaceable, and innocent animals, which seem created to adorn and animate the solitudes of the forest, and to occupy, remote from man, the peaceful retreats of Nature. His light and elegant form, his slexible yet nervous limbs, his grandeur, strength, and swiftness, his head, rather adorned than armed with living branches, which, like the leaves of a tree, are every year renewed, sufficiently distinguish him from the other inhabitants of the forest. As he is the noblest

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among

among these, he has been made subservient to the pleasures, and employed the leisure, of the greatest heroes. The exercise of the chace may well fucceed, or should rather precede the fatigues of war. To be acquainted with the management of horses and arms are talents equally common to the warrior and the hunter, A familiarity with address, bodily exercise and fatigue, so necessary to support courage, are found in the chace, and carried into the field of battle. Hunting is an agreeable school of a necessary art; the only amusement which entirely detaches diversion from business; the only recreation that is totally unaccompanied with effeminacy, and always produces a lively pleasure, that never satiates or cloys. In what manner can those men be better employed who, from their fituations, are conftantly fatigued with company, than in hunting? Continually, as it were, befet with a multitude, exposed to the importunity of their demands, forced to attend to the affairs of others, to embark in matters of the greatest concern, and, in effect, to be the more constrained in proportion to the elevation of their stations; great men would only feel the irksome weight of grandeur, and exist only for others, if they did not occasionally abstract themselves from a croud

that

croud of attendant flatterers. To enjoy themfelves to real focial affections, and prefer re
private friendships, sentiments a thousand times
more precious than all the ideas of grandeur,
they have need of retirement from the bustle
of business, and what retirement can afford
greater variety, or be accompanied with more
animation than the chace? what exercise can
be more beneficial to the body? what relaxation more agreeable to the mind?

To be always acting, or holding intercourse with man, would be as fatiguing as perpetual thinking. Man is not intended by Nature for the contemplation of abstract matters; to occupy himself in difficult pursuits, to lead a fedentary life, and to make his study his centre of existence, is, by no means, a natural situation, any more than it is to be perpetually agitated by the caprices of other men, and to be continually constrained to keep a guard over his looks, words, and actions. Whatever ideas we may entertain of ourselves, it is evident that to personate is not to be, and that we are less calculated to think than to act, to reason than to enjoy. True pleasure consists in the unrestrained use of ourselves. Our best posfessions are those we have from Nature. It is the air and the earth, the plains and the forests, that yield us true enjoyments, full of utility, and never to be exhausted. A taste for the chace, fishing, gardening, and agriculture, is, therefore, natural to all men; and in societies more simple than ours there subsist but two orders, both relative to this mode of life; the nobles, whose employment is war and hunting, and the lower people, whose sole office is the cultivation of the earth.

In polished societies, where every thing is refined and brought to perfection, to render the pleasures of the chace more lively and delightful, and to ennoble an exercise which is in itself noble and beneficial, it has been formed into an art. The chace of the stag requires a species of knowledge which can only be acquired by experience; it supposes a royal assemblage of men, horses, and hounds, all so practised, trained and disciplined, as by their mutual intelligence to contribute to one end. The huntiman ought to be able to judge of the age and fex of the animal. He should be able to diffinguish exactly whether the stag his hound has harboured, be a brock, or a staggard; whether it is a young stag, not passed his seventh year, or an old one: the principal marks to obtain this knowledge is derived from the print of his foot, or his excrement. The foot of the stag

is better formed than that of the hind; her leg\* is larger and nearer to heel. His steps leave rounder impressions, and are farther asunder; he walks more regularly, and brings the hindfoot exactly into the impression made by the fore-foot; whereas the paces of the Hind are not only shorter, but her hind-foot does not so regularly fall into the track of her fore-foot. A stag of the fourth head, that is, has acquired his fourth horns are easily distinguished; but it requires much experience to know the foot of a young stag from that of a hind. A stag of fix or feven years is still more easily distinguished, for his fore-feet are much larger than his hind-ones, and the older he grows the thicker, or more worn, are the fides of his feet: the distance of his steps are also more regular, his hind-foot resting always with tolerable exactness upon the track of his fore-foot, unless when they shed their horns, when the old stage is as liable to mistake as the young ones, though in a different manner, and with a regularity unknown to the young stag or the hind, for they rest the hind-foot always at the side of

<sup>\*</sup> By the leg is understood the two bones at the lower extremity behind the foot, which leave an impression upon the ground as well as the foot.

the fore-one, and never either beyond or within that reach.

In the dry feafon, when the huntiman cannot judge by the footstep, he is obliged to return upon the track of the animal, and endeavour to find his dung. To be able to determine by which requires perhaps more experience than a knowledge of the footsteps, yet without it the huntiman could not make a just report to the fportsmen assembled. When, in consequence of this report, the dogs are led to the shelter of the stag, the huntiman should know how to animate his hound, and make him rest upon the track of the stag until he be dislodged. Instantly the horn is founded to uncouple the dogs, which the huntiman should encourage both by the horn and his voice; he should also carefully mark the footsteps of his stag, to difcover if he should start another, and substitute. him in his place; it will, in that case, sometimes happen that the dogs will divide and form a double chace; when so the huntsmen should divide also and recal those dogs which have thus gone aftray. The huntiman should always accompany his dogs, and continue to animate without preffing them too hard; he should also affift them in order to prevent their being deceived by the stag, who will try a number

of artifices to elude them; he will frequently trace and retrace his own steps, mix with others, and endeavour to draw a young one to accompany him, and fo put a change upon the dogs; he will then redouble his speed, dart off on one fide, or lie down upon his belly to conceal himfelf. In this case, when the dogs have lost his foot, the huntsman and the hounds labour in conjunction to recover it; but if unable to hit upon his track, they conclude he is refting within the circuit they have made; if their endeavours continue unsuccessful, they have no other way left them but to take a view of the country, which may give him an idea of the place of his refuge. When discovered, and the dogs again put upon his track, they pursue with more advantage, as they perceive the stag is fatigued; their ardour augments in proportion as his ftrength diminishes; and their perception is more lively, as the animal becomes heated; they then redouble their cries and their efforts, and though he is now more full of stratagems than ever, yet as his swiftness diminishes, his doublings and artifices become less effectual. and he has no other resource but to abandon the earth which has betrayed him, and get into the water to make the dogs lose their scent. The huntimen traverse these waters, and again VOL. VI. put

put the dogs upon the track of his foot; after which he is incapable of running far, and reduced to his last extremity, stands at bay. He still endeavours to desend his life, and often wounds dogs, horses, and even huntsmen, with his horns, until one of them ham-string him that he may fall, and then put him to death by a stroke of his hanger. They then celebrate the death of the stag with a slourish of horns, and the dogs partake of the victory by their perquisite of his slesh.

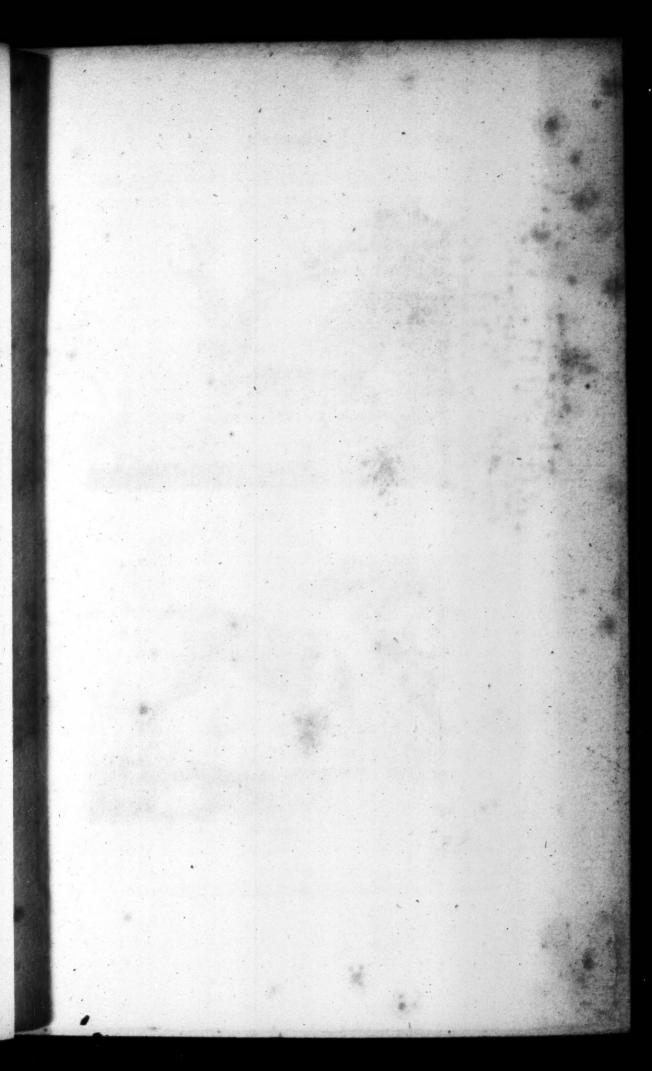
All feafons are not alike proper for hunting the stag. In spring, when the forests begin to be cloathed with leaves, and the earth to be covered with verdure and flowers, their odour diminishes the scent of the hounds, and as the stag is then in his full strength it is difficult for them to overtake him. The huntimen also agree that the season when the hinds are about to bring forth is that in which the chace is attended with the most difficulty; and that, at that time, the dogs will quit a fatigued stag, to follow any hind that gambols before them: and in like manner, at the beginning of autumn, which is the stag's rutting season, the bloodhounds lose all their ardour in hunting; the strong scent of the rut probably renders the track less distinguishable, and very possibly the **scent** 

fcent of all stags is at this season nearly the fame. In winter, when the fnow lies on the ground, it is also improper to hunt the stag, as the hounds have no fcent, and appear to follow the track rather by the fight than the fmell. At this feafon, as the stags find not fufficient food in the forests, they issue forth into the open country, and go even into inclosures and cultivated lands. They unite in herds in the month of December, and when the frosts are fevere, they endeavour to find shelter by the fide of a hill, or in a thicket, where they lie close, and keep themselves warm by means of their breath. At the end of winter they frequent the borders of the forests, and frequently destroy the rifing corn. In spring, they shed their horns, which fall off spontaneously, or by a fmall effort after entangling them with the branch of some tree. It is seldom that the horns of both fides fall at the same time, there usually being an interval of a day or two between them. The old stags shed their horns first, which happens about the end of February, or beginning of March; those in the seventh year in the middle of March; those in the fixth year, the beginning of April; the young stags, those from three to five years old, the beginning, and the prickets not till the middle, or latter end of May. F 2

May. But in all this there is much variety, for old stags sometimes shed their horns later than those which are young; besides they are more forward in casting their horns when the winter has been mild, than when severe and of a long continuance.

After the stags have cast their horns they feparate, the young ones only keeping together. They remain no longer in deep covert, but feek the beautiful part of the country, and continue among the coppices during the fummer, and until their antlers are renewed. In this feason they carry their heads low for fear of rubbing their horns against the branches, for they are very tender until they arrive at perfection. The horns of the eldest stags are not more than half renewed by the middle of May, nor acquire their full growth and hardness before the end of July; the younger stags are later both in shedding and having them renewed; but when completely lengthened and hardened, they rub them against the trees to clear them from a fcurf with which they are covered, and as they continue this practice for feveral days successively, it has been said their horns receive a tint from the juices of the trees against which they rubbed; that they derive a red cast from the beech and birch, a brown one

from



Engrarator Barri Bulton .



Fig. 54.



FIG. 55.

Hind .

Publisha by LS. Barr Dec! 30.1791.

from the oak, and a black one from the elm, or trembling poplars. It is also afferted that the horns of the young stags, which are smoother and unpearled, are not so much tinged as those of the old ones, which are rougher, and covered with these pearlings, which retain the sap of the tree. But I cannot be persuaded that this is the true cause, for I have had tame stags shut up in inclosures, where there were not a single tree, whose horns were, nevertheless, coloured in the same manner as those of other stags.

Soon after the stag (fig. 54.) has polished his horns he begins to feel an inclination for the females, and in which respect the oldest are most forward. By the end of August, or beginning of September, they leave the coppice, return to the forest, and begin to search out for favorite hinds; (fig. 55.) they cry with a loud voice, their necks and throats fwell, they grow restless, and traverse the fallow grounds and plains in open day, and they dart their horns against the trees and hedges; in a word they feem transported with fury, and range from place to place till they have found their females, whom they then have to pursue and overcome, as the hind flies from him, and never becomes subservient to his passion until the is subdued by fatigue: those hinds which

are most advanced in years are first in season. If two flags approach the same hind a combat must precede the enjoyment; if their strength is nearly equal they threaten, plough up the earth with their paws, make a terrible noise, and dart upon each other with the utmost fury; carry on their battles to fuch extremities that they often inflict mortal wounds with their horns; nor is the combat ever concluded but by the defeat or flight of one of them. The conqueror loses not an instant to enjoy the fruits of his victory, unless another male happens to appear, when he is again obliged to quit his mate, and put him to flight as he had done the other. The oldest stags are sure to gain the battle, because they are more fierce and stronger than the young ones, who are obliged to wait patiently until their feniors are fatisfied and quit the hind; though fometimes, indeed, they take the advantage while the two old ones are fighting, and then make a precipitate retreat. The hinds also prefer the old stags, not merely because they are the most valiant but because they are more ardent. They are also the most inconstant, and commonly have feveral females at the fame time; and when they happen to have but one they remain attached to her but a very few days, 2015 when

when they go in fearch of a fecond, with whom they remain a still shorter time, and then wander from female to female until they are quite exhausted. This amorous fury, however, lasts not above three weeks, during which time they eat but little, and are strangers to all repose; night and day are they on foot, ranging about, fighting with the males, or enjoying the females, and of course, when the rutting season is over, they are so wasted, meagre, and fatigued, that they require a length of time to recover their strength. They then retire to the borders of the forests and graze on the best cultivated lands, where they find food in abundance, and where they continue until their strength is restored.

The rutting time among the old stags commences about the first and concludes about the 20th of September; with those in the sixth or seventh year it begins in the middle of September and ends the beginning of October; with the young stags it begins about the 20th of September and lasts to the 15th of October, by the end of which month the rutting is all over, except among the prickets, who, as well as the young hinds, are the latest in coming in season; thus by the beginning of November the rutting time is entirely sinished; and at that

that time the stags, being in their weakest state, are most easily hunted down. In those feafons when acorns are plentiful they recover in a very short time, and a second rut will take place towards the end of October, but this is always of a much shorter duration than the first. In warmer climates, as the seasons are more forward fo is the rutting time. Aristotle has told us that in Greece it commences at the beginning of August and concludes towards the end of September. The hinds carry their young eight months and a few days, and feldom produce more than one fawn; they bring forth in May or the beginning of June; they take the greatest care to conceal their fawns, and will even present themselves to be chaced, in order to draw off the dogs, and afterwards return to take care of their young. All hinds are not prolific, and some of them are even barren: these kinds are more gross and fatter than the others, and are tooner in heat. It is also faid that some hinds have horns like the ftags, and this is not void of probability. The fawns are not fo called after the fixth month, then the knobs begin to appear, and they take the name of knobbers, which they bear until their horns lengthen into spears, and then they are called brocks, or prickets.

prickets. Though they grow very fast they do not quit their mothers all the first summer. In winter they all refort together, and their herds are more numerous as the season is more fevere; in the fpring they divide; the hinds retiring to bring forth, and it is only the prickets and young stags which then keep together. In general the stags are inclined to affociate, and it is only from fear or necessity that they are ever found dispersed. At 18 months the stags are capable of engendering, for those brought forth in the spring of the preceding year will couple with the hinds in autumn, and it is to be prefumed that fuch copulations are prolific. If any thing can create a doubt on this subject, it is that the stags have not then attained more than halt their growth, for they continue increasing in fize till their eighth year, and to that period their horns continue to augment. But it is to be observed that the young fawn gains strength in a little time, that his growth is very quick, both in the first and second years, and that it has already a redundance of nourishment, because it shoots forth its knobs, which are certain indications of its ability to engender. Animals in general, it is true, are not in a condition to procreate till they have nearly acquired their full growth; YOL. VI. but

but those which have certain times allotted for copulation, or spawning, seem to be an exception to this rule: sishes spawn and produce young before they have attained a fourth, or even an eighth of their full growth, and among quadrupeds, such as the stag, elk, fallow-deer, &c. the period for rutting is exactly marked, and they copulate sooner than other animals.

There are fo many affinities between the nutrition, the production of the horns, the rutting, and the generation of these animals, that, for the better conception of the particular effects that flow from them, it is necessary to renumerate a few of the general principles on reproduction. Generation depends folely on the redundancy of nourishment; in infancy, when the growth is quickest, the nourishment is entirely employed in the extension and expansion of the body; at that period, therefore, there is no superabundance, consequently no production or fecretion of the feminal fluid, of course young animals are not in a condition to engender; but when nearly acquired their growth the redundancy begins to manifest itself by new productions. In the human race, the beard, hair, increase of the breasts, and organs of generation, appear at the age of puberty. In the brute creation, and particularly the

the stag, the redundancy manifests effects still more fenfible, as the shooting of the horns, the fwelling of the neck and throat, the rutting. &c. and as the stag is very quick at first in his growth, a year does not pass before this redundance shews itself, by the appearance of his horns. If brought forth in May the horns begin to appear in the May following, and they continue to increase to the end of August, by which time they are full grown, and fo hard that he rubs them against the trees to clear them of the scurf; the fat also at this time begins to accumulate, is determined towards the parts of generation, and excites in the stag that ardour and defire which renders him fo furious. That the production of horns, and power for generation, proceed from the fame cause is evident, for by castration the growth of the horns is likewise prevented; for if this operation is performed after he has shed his horns they will never be renewed, and if done when they are perfect he will never shed them again; in effect he will remain all the rest of his life in the same state as when he suffered castration; and as he no longer experiences the ardour of the rut fo the accompanying figns also disappear, and he becomes a tame and peaceable animal. From hence it appears G 2 that

based

that the retrenched parts were necessary for collecting and diffusing them over his whole body in the form of fat, particularly at the top of the head, where it gives rife to the horns. It is true, indeed, that castrated stags become fat, but the production of their horns ceases, their necks and throats never fwell, and their fat is very different from that of the perfect stag, which in the rutting season is so very strong as not only to render the flesh uneatable but offensive to the smell, and will corrupt in a very short time, while that of the former may be long preferved sweet, and eaten at all times. Another proof that the horns are produced by a redundance of the nutritive juices may be drawn from the circumstance, that those of stags of the same age will be either thick or thin, in proportion to the supply of food; for the stag which lives in a plentiful country, where he feeds at his pleasure, and rests at his ease, undisturbed by dogs or men, will always have much larger and more beautiful antlers than he who has scanty subsistence, and diffurbed in his repose; insomuch that it is easy to determine by the horns of a stag whether he has inhabited a rich and quiet country. Those also which are in bad health, have been wounded, or frequently disturbed by hunting, have

have feldom fine horns or good flesh; they are later in beginning to rut, and their horns are neither shed nor renewed so early as others. Thus every circumstance concurs to prove, that the horns, like the seminal shuid, are merely the redundant superstuity of the organic juices which cannot be employed in developing and supporting the animal body.

It is the infufficiency of food, therefore, that retards the growth of the horns and diminishes their fize; and perhaps it would not be imposfible greatly to prevent their growth entirely without having recourse to castration. It is certain that castrated stags eat less than others; and the reason the females of this species, as well as the fallow-deer, the roe, and the elk have no horns, is because they eat less than the males, and because at the very time the redundance would naturally happen, and appear externally, they are with young, and confequently the superfluous juices are first employed in nourishing the fœtus and afterwards in produceing milk for the fawn. The objection that the female rein-deer is furnished with horns rather supports what is here advanced; for of all quadrupeds which have horns, the rein-deer has by much the largest in proportion to his fize, as they frequently etxend the whole length of

his body; he also abounds more in fat, and those of the females are very small comparatively with those of the male; the instance therefore only ferves to prove, that when the redundancy exceeds what can be exhausted by gestation, it diffuses itself outwardly in the same manner as that of the males. These remarks, respecting nourishment, are not, however, to be extended to the quantity of provisions, but folely to the organic molecules which they contain; the latter being that active and prolific matter which supports animated beings, and the latter a dead mass which has no effect upon the body of the animal; and as the lichen rangiferinus, a kind of mass that is the ordinary food of the rein-deer, is more substantial nutriment than the leaves, bark, or buds of trees, on which the common stag feeds, it is not wonderful that the former should have a greater redundance of organic particles, and confequently more fat and larger horns than the latter. It must be allowed, however, that organic matter, which produces these horns, is not entirely separated from inanimate particles, but preserves even after it has passed through the body of the animal, characteristics of its former vegetable state. The horns of the stag in their make and growth refemble the branches of a tree; and

its substance is perhaps more of the nature of wood than bone; it is, as it were, a vegetable grafted upon animal, partaking of the nature of both, and forms one of those shades by which Nature always approximates to the two extremes.

In animals the bones grow at the two extremities at the fame time, at first becomes hard in the middle and the two ends continue foft and receding therefrom until it has acquired its full length. In vegetables, on the contrary, the wood advances by one extremity only; the bud which unfolds to form a branch is only attached to the old wood by its lower end, and it is from this point that it exerts its power of extenfion in length. This remarkable difference between the growth of bones and the folid parts of plants, does not take place in the horns of the flag, as nothing can bear a stronger resemblance to their growth than that of a branch of a tree: they extend from one extremity only, they are at first as tender as an herb and then harden like wood. The fcurf which covers and grows with them is their bark, which the animals rub off when arrived at their full growth; until this is completed the ends remain foft, and likewife divide themselves into a number of branches. In a word there is a perfect

perfect resemblance in the development of both, and therefore the organic molecules, which constitute the living substance of the horns of the stag, still retain the image of the vegetable, because they are arranged in the same manner as in vegetables. Here we see that matter has an influence over form. The stag, which lives in the forest, and seeds only on the leaves of trees, receives from them so strong an impression that he produces a sort of tree, of whose origin it is impossible to mistake. This effect, though surprising, is not singular, but depends on that general cause which we more than once have already had occasion to point out.

The most constant and invariable thing in Nature is the image or model allotted to each particular species, both in animals and vegetables; what is most variable is the substance of which they are composed. Matter, in general, seems to receive all forms with indisference, and to be capable of all configurations; the organic and living particles of this matter pass from vegetables into animals, without suffering dissolution or alteration, and equally form the living substance of herbs, trees, slesh, or bones. It may seem from this first glance that matter can never predominate over form,

and that no fort of nourishment taken by the animal, provided he can draw out the organic particles, and affimilate them to himself by nutrition, can occasion any change upon his form, and can have no effect but that of fupporting, or adding to the growth of his body. Of this we have a proof in those animals which live folely upon herbage, who, though a fubstance widely different from their own bodies, draw from it every thing necessary to constitute flesh and blood, and will even exceed in bulk those who feed upon animal food. In taking a more particular view of Nature we find this is not always the case. Height, for example, which is one of the attributes of form, varies in every species according to the difference of climate; as do the quantity and quality of the flesh, two other attributes of form, according to the different kinds of food. The organic matter which the animal affimilates to its body by nutrition, is not, therefore, abfolutely indifferent to his modification, nor deprived of its original figure; it continues to act in its own form, and though this action be almost imperceptible, yet, in process of time, it necessarily produces very sensible effects. The stag, who inhabits the forests, and lives only upon wood, produces a species of trees, VOL. VI. which H

which is nothing more than the superabundant part of his food. The beaver which inhabits the water, and feeds upon fish, has a tail covered with scales; and the flesh of the other, as well as of most aquatic fowls, is of a fishy nature. It may then be prefumed, that animals which live conftantly upon one kind of food will, in time, imbibe a tincture of its aliment; and however strong the original impression of nature may be, a kind of transformation will take place, by an affimilation contrary to the first. In this case the nourishment no longer affimilates entirely to the form of the animal, but partly to the form of the nourishment, as is seen in the horns of the stag and the tail of the beaver.

The horns, then, are but an excresence, a part foreign to the body of the stag, and only esteemed as an animal substance because it grows from him; it is in reality a vegetable production, since it retains all the marks of that vegetable from which it derives its origin, and resembles the branch of a tree in the manner it grows, expands, hardens, dries, and separates; for it falls off spontaneously, after having acquired its sull degree of solidity, like a ripe fruit from the branch. The very name given to this production in the French lan-

guage

guage \* is a proof it has been confidered as a species of wood, and not as a horn, a bone, a tulk, a tooth, &c. In addition to these arguments we may add a fact recorded by Aristotle, Theophrastus, and Pliny, who all affert that ivy has been feen to grow round the horns of stags while they were in a tender state. It this be true, and it would be easy to make the experiment, it must still more fully establish the analogy between the wood of the stag and that of trees. The horns and tulks of other animals are not only of a substance different from the branches of a stag, but also in their growth, texture, and form, both exterior and interior, there is nothing which bears any analogy to wood: these and the nails, claws, hair, feathers, scales, &c. grow, it is true, by a kind of vegetation, but a vegetation widely different from that of trees. The horns of oxen, goats, antelopes, &c. are hollow within, whereas those of the stag are entirely solid; the substance of the former is the same with that of nails, claws, scales, &c. but the horns of the ftag refembles wood more than any other substance. All these hollow horns are covered on the infide by a periosteum, and contain

The French word is bois, a forest, a wood, likewise used for the substance or branch of a tree.

contain in their cavities a bone, which serves to support them; they never fall off, but continue to increase during the life of the animal, and will affish in determining its age, by the number of annual rings. Instead of growing, like those of the stag, from the upper extremity, like nails, seathers, and hair, they grow from the lower end, extending upwards. Thus it is also with the tusks of the elephant, seatow, the boar, and all other animals; they are hollow within, and grow only from the lower extremity. These horns or tusks have therefore no more resemblance than nails, hairs, or feathers, to the horns of the stag.

Vegetation is reducible to three kinds, the first is, when the growth proceeds from the superior extremity, as in herbs, plants, trees, and the antlers of stags; the second, when it is made from the inserior extremity, as in horns, claws, nails, hair, scales, tusks, teeth, feathers, and other exterior parts of animal bodies; the third, when the growth advances from both extremities at the same time, as in bones, cartilages, muscles, tendons, and other internal parts of animals. Of all three the material cause is the superabundance of organic nourishment, and the only effect, the assimilation of that nourishment to the mould wherein

it has been received. Thus the animal grows more or less quickly in proportion to the quantity of fuch nourishment, and when the growth is nearly completed it then feeks to employ itself in the propagation of new organized beings in the manner as we have before stated. The difference between animals, which, like the stag, have fixed seasons, and those which can engender at all times, proceeds likewise from the manner of their feeding. Man and domestic animals, which every day receive an equal quantity of fustenance, and frequently to an excess, may engender at all feafons. The ftag, and most wild animals, on the contrary, who fuffer much from want in the winter, have no superabundance, nor are in a flate to engender till they have recruited themselves during the summer; and it is then the rutting feafon commences, and during which he exhausts himself so much that he remains the whole winter in a state of languor. His flesh and blood are then so impoverished that worms breed under his skin, which still add to his misery, and which do not perish till the fpring, when he recovers new life from the active nourishment he is abundantly furnished with by the fresh productions of the earth.

Thus does this animal pass his whole life in alternate plenty and want, vigour and inanition, health and fickness, without having his constitution much affected by the violence of those extremes; nor is the duration of his life inferior to those animals which are not subject to fuch viciffitudes. As he is five or fix years in growing so he lives seven times that number, or from 35 to 40 years. What has been reported of the prodigious longevity of the flag has no foundation, being only a popular prejudice, which took place in the days of Aristotle, and which he did not consider as probable, because neither the time of gestation, or growth, indicated long life. Notwithstanding this authority, which ought to have abolished the prejudice, it was again renewed in the days of ignorance, and supported by the story of a stag which was taken by Charles VI. in the forest of Senlis, with a collar upon his neck, bearing the inscription "Cæsar hoc me donavit;" and the people rather chose to believe this ftag had lived a thousand years, and had received his collar from a Roman emperor, than that he came from Germany, where the emperors even now assume the name of Cæfar.

The horns of the stag increase in bulk and height from the second year to the eighth, and from that time remain with equal beauty during all the vigour of life; but when he begins to decline with age they decline also. It is feldom our stags have more than 20 or 22 antlers, and even this number is by no means conftant, but he will have a greater number one year than another, according to the nourishment and repose he has enjoyed; and upon the same circumstances the fize and quality of the horns likewise depend. It is like the wood of the forest, large, tender, and light, in moist and fertile countries, and short, hard, and heavy in such as are dry and barren. The fize and shape of the animals also vary according to the districts they inhabit. Those which range in vallies, or gently-rifing hills, which abound in grain, are much larger than those which frequent dry and rocky mountains; the latter are short and thick; they are not so fwift as the former, but can run much longer; they are likewise more mischievous; their horns are short and black, like a tree stinted in its growth, whose bark is always of a darkish hue; whereas the horns of those which feed on plains are lofty, and of a clear red, like the wood and bark of trees which grow in a good foil.

foil. These little thick stags generally inhabit among the underwood, where they can the more eafily conceal themselves from the purfuit of the dogs. The stags of Corfica appear to be the smallest of these mountainstags, and are hardly more than half the fize of those common among us, and are, as it were, the terrier among stags; his body is squat, his legs are short, and his hair is dark brown. I am convinced that the fize and stature of stags depend upon the quality and quantity of of their food, by having reared one, and fupplied him very plentifully, and who at the end of four years was taller, plumper, and in every respect better furnished than the oldest stags in my woods, though they are of a very large fize.

The most common colour of the stag is yellow, though many of them are brown, and some red. White stags are more uncommon, and seem to be a race which have become domestic, but from very ancient date, as both Aristotle and Pliny mention them, though as very rare. The colour of the horns, as well as the hair, seems to depend on the nature and age of the animal, and the impression of the air. The horns of the young stags are more white and untinged than those of the

old ones. Those stags whose hair is a light vellow have often fallow coloured horns; those of a lively yellow their horns are red, and brown ones, especially those which have black hair on their necks, have black horns. It is true that the interior parts of the horns of all stags are almost equally white, but they differ greatly in point of folidity and texture. Some of them are even fpongy and in which there appear large cavities. This difference of texture is fufficient to account for their difference in colour without having resource to the sap of trees as productive of that effect; especially since we daily fee the whitest ivory changes brown or yellow if exposed to the air, although its substance is more complete than that of the horns of the stag.

The stag seems to have good eyes, an exquisite smell, and excellent ears. When listening he raises his head, pricks up his ears, and then hears from a great distance; when going into or issuing from a coppice, or half-covered place, he stops to take a full view round him, and scents the wind by way of discovering whether any thing is near that is likely to give him disturbance. Though rather simple he has curiosity and cunning. If any one whistles or calls to him from a distance, he stops short, you use I gazes

gazes attentively, and with a kind of admirations and if those who disturbed him have neither arms nor dogs, he passes along quietly and without altering his pace. With equal tranquility and delight he appears to liften to the shepherd's pipe, and the hunters to embolden them fometimes make use of those instruments. In general he fears men much less than dogs, and entertains neither diffrust nor artifice but in proportion as he is diffurbed. He eats flow, felects his food, and when full he feeks out a place to lie down and ruminate at leisure; though he does not feem to perform the act of rumination with the same ease as the ox, and it is not without violence that he can make the food rife from his first stomach; this arises from the length and direction of the passage through which the aliment has to pass. The ox has a straight, short neck, but that of the stag is long and arched, and therefore efforts are neceffary to raise the food, and which efforts are made by a kind of hiccough, the action of which is manifest as long as he continues to ruminate. As he advances in age, his voice is more strong and tremulous: that of the hind is weaker and shorter, and she never exerts it from love but through fear. The stag raises a frightful cry in rutting time, when he is fo transported that

that nothing disquiets or terrifies him; he istherefore eafily furprifed, and being loaded with. fat cannot long maintain the chace; but when reduced to an extremity he is dangerous and will attack the dogs with a kind of fury. He feldom drinks in the winter and not at all in the foring, the dew with which the tender grass is furcharged being then fufficient; but in the heat of fummer, he has recourse to brooks, marshes and fountains, and in rutting time he is fo overheated that he fearches every where for water, not only to appeale his immoderate. thirst, but to bathe himself and to refresh his body. He swims then much better than at any other time because of his fat which is specifically lighter than an equal quantity of water. He has been feen to cross large rivers; it has even been afferted, that allured by the scent of the hinds in rutting-time, stags will throw themfelves into the sea, and pass from one island to another at the distance of several leagues. They leap still better than they swim, for when purfued they eafily clear a fence, or hedge, of fix feet high. Their aliment differs according to the feasons: In autumn, after the rutting feason, they fearch out the buds of green shrubs, the flowers of the heath, brambles, &c. in the winter, during fnow, they peal the bark

off the trees, and feed upon that and the moss, &c. and in mild weather he ranges for provender among the corn fields. In the spring they seek out the trembling poplar, willow, hazel, &c. In summer, when they have abundance, they feem to like no grain so well as rye, and no wood equal to the black-berry, bearing alder.

The flesh of the fawn is very delicate, that of the hind and pricket not bad, but that of the full-grown stag has always a strong and disagreeable taste. The skin and the horn are the most useful parts of this animal; from the former is made a very pliable and durable leather. The horns are used by cutlers, and other mechanics, and a volatile salt, much used in medicine, is drawn from it by chymists.

## SUPPLEMENT.

BY a letter I received from M. Beccaria, a celebrated Professor at Pisa, dated October 28, 1767, it appears the pupil of the eye of the stag, as well as that of the cat, owl, &c. contracts in the light, and dilates in the dark; of this he was perfectly convinced by some experiments he made with a stag confined in a darkened

darkened apartment, but he found the effect was very different from that in the animals above-mentioned, for their contraction and dilation is made vertically, while those of the stag are horizontally.

I have also received information of a fact from M. le Marquis d'Amazaga that merits being noticed in the history of the stag: We have already observed that their horns begin to acquire the form and confiftence, which they retain for the remainder of the year, at the beginning of August, and after noticing this fact he proceeds in the relation, that, on the 17th of October, the attendants of the Prince of Condé chaced a fix year old ftag, and it being the rutting feafon they were greatly furprifed at the fwiftness of his pace and the distance he led them, which was full fix leagues from his harbour; and this surprise received no small addition when he was taken, by his horns appearing white and sprinkled with blood, as they are at the feafon when they rub them against the trees; and it was evident, on his being opened, from the situation of his interior parts, that he had never experienced the effects of the rut, and as he had not been in a condition for rutting he was as loaded with fat as though it had been the month of June, July,

or August. Besides this, he had another fingularity; his right foot wanted the middle bone, and which in the left was at least half an inch long, large, and pointed. As the stag, if he is castrated when he has no horns, never acquires any after, or never loses them if performed when his horns are in perfection, it is but reasonable to suppose that they were retarded, in the present instance, from the imbecility of his organs, but which however were fufficient to effect the fall and renewal of his horns, as it was evident when he was killed. that he had had horns annually from the fecond to the fixth year." These observations strongly prove the justness of our former remarks upon the renovation of the horns of the stag.

In remarking on the Norwegian stags, Pontoppidan says, "they are only in the dioceses of Bergan and Drontheim, and that they have been seen to swim in numbers across the straits, from the continent to the adjacent islands, resting their heads upon each other's cruppers, and when those who lead are fatigued they retire behind, and the most vigorous take their places."

Some attempts have been made to render our stags domestic, by treating them with the same gentleness as the Laplanders do their

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tein-deer; upon which subject M. le Vicomte de Querhoënt has informed me of the sollowing fact: "The Portugueze first brought stags to the Isle of France, and although they took their origin from those of Europe they were small, and their colour grey; there were great numbers of them upon the island when the French took possession of it; they destroyed numbers of them, but a great many secured themselves in the most retired places; these by degrees have become quite domestic, and some of the inhabitants keep them in large slocks."

There is a small kind of stag at l'Ecole Veterinaire, which I have feen, and which is faid to have come from the Cape of Good Hope. It was spotted with white, somewhat like the axis, and was called the hog ftag, merely, as it should seem, because its legs were shorter, and it was not so agile as the common kind. This was only in length, from the muzzle to the extremity of the body, three feet four inches; its legs were short, and its feet and hoofs fmall; it was yellow, with white fpots, black eyes, and black hair on the upper eyelid; the noftrils were also black, as were the corners of the mouth; the head was nearly of the same colour as the belly, and it had large ears, white on the in and yellow on the outside. ofmico

outfide. Its horns were above eleven inches long and ten lines thick. Its back was dark brown, its tail was yellow above and white beneath, and its legs were of a brownish black. From all which it appears this animal approaches nearer to the species of the stag than to the fallow-deer.

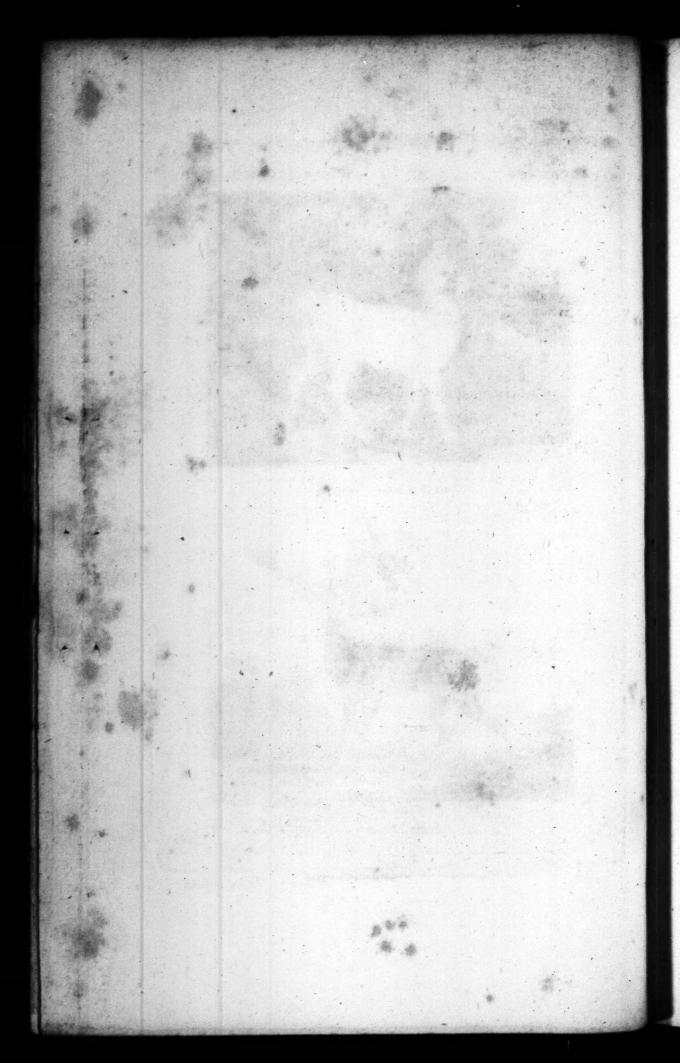
## THE FALLOW-DEER.

NO two animals can make a more near approach to each other than the stag and the sallow-deer, and yet no two animals keep more distinct, or avoid each other with more fixed animosity; they never herd or intermix together, and consequently never give rise to an intermediate race. It is even rare, unless they have been transported thither, to find sallow-deer in a country where stags are numerous. They seem to be of a nature less robust and less rustic than the stag; are less common





Fallow Deer: Published Oce: 29 1791 by I.S. Barr.



common in the forests, but are kept in parks, where it may be faid they are half domestic. They abound more in England than in any other country in Europe; and there the people are extremely partial to their venison. The dogs also prefer the flesh of this deer to that of all other animals; and when once having tafted it they will quit the chace of the stag or roe when they come across the track of a fallow-deer. There are some of them in the neighbourhood of Paris, in some provinces of France, Spain, and Germany, as also in America, where probably they have been carried from Europe. It feems to be an animal formed for a temperate climate, for there are not any in Russia, and are rarely met with in Sweden, or any other northern country. Stags are much more generally diffused. They are found throughout Europe, even in Norway, and over all the north, Lapland, perhaps, excepted; in Afia, especially in Tartary, they are numerous, as well as in the northern provinces of China. They are likewise found in America; for those of Canada differ only from ours in the height of their horns, and in the direction of their antlers, which is fometimes not straight forward, as in the heads of the common stags, but turned backward by a very evident inflec-K VOL. VI. tion;

tion; but this form of the horns is not confined to the Canadian stag, as it is nearly the fame in the Corfican flags; and some that came from Russia and Germany, have a kind of crown at the fummit of their antlers, but these are only varieties, and not different species. There are large and small stags in America as well as in Europe, and yet, however diffused their species may be, they seem to be confined to cold and temperate climates. The stags of Mexico, and other parts of South America; those of Cayenne; those called stags of the Ganges, which are spoken of by M. Perault, under the name of the Sardinian hinds; those to which travellers have given the appellation of Cape stags; those of Guinea, and other warm countries, belong not to the common species, as will appear from the particular history we shall give of each of those animals.

As the fallow-deer is less savage, more delicate, and indeed more domestic than the stag, he is also subject to a greater number of varieties. Beside the common and white fallowdeer, we know of several other kinds, as those of Spain, which are almost as large as stags, but whose necks are more slender, their colour darker, their tails black underneath, and are longer than those of the common deer; those

of Virginia, which are almost as large as those of Spain, and are remarkable for the fize of their genital organs. There are others with compressed foreheads, whose ears and tails are longer than those of the common fallow-deer, and who have the hoofs of their hind legs marked with a white spot; others are spotted or ftreaked with white, black, or yellow, and there are others entirely black, all of which have their horns more flat, broad, and are better furnished with antlers than those of the stag, they likewise incline more inwardly, and are more palmated at the points. Of the common fallow-deer the tail is longer than that of the stag, and its hair is lighter. The horns of the buck, like those of the stag, are flied every year, and are nearly the same time in being renewed; but as this change happens later, so is their rutting season, by from fifteen days to three weeks than that of the stag. They are neither fo furious at this time, nor exhauft themselves so much by the violence of their ardour; they never quit their own paftures in fearch of the females, though they will dispute and fight furiously for the possession of them. It often happens, that when there is a great number in one park that they will divide into two parties and engage each other K 2 with

with much refolution: these contests generally occur from a wish they both have of grazing upon some particular spot. Each of these parties has its own chief, namely, the oldest and strongest in the herd. These lead on to the engagement and the rest follow under their direction. Their combats are fingular from the conduct by which their efforts feem to be regulated; they attack with order, and support the affault with courage; mutually affift each other, retire, rally, and never yield the victory upon a fingle defeat; for the battle is daily renewed, till the weakest party are quite defeated, from which time they are obliged to retire to fome secluded part of the park, and be contented with the worst pasturage. They love elevated and hilly countries. When hunted they do not fly far before the hounds, like the stag, but fludy entirely how to escape from the dogs by stratagem; when preffed and heated they will plunge into the water, though its very rare that they will take to a great river. In the chace therefore between the fallow deer and the stag there is no effential difference, their instincts and artifices are the fame, though more put into practice by the former; which together with the lightness of his step, render it more difficult for the dogs to avoid being deceived.

The fallow deer is eafily tamed and feeds upon many things which the flag refuses; he also preserves his vension better; and even after rutting, and the longest winters follows, he does not appear exhausted, but continues nearly in the same state throughout the year. He browles closer than the stag, for which reason he is more prejudicial to young trees, and often strips them too close for recovery. The young deer eat faster and with more avidity than the old. At the fecond year they feek the female, and, like the stag, are fond of variety. The doe goes with young eight months and some days; the commonly produces one fawn, fometimes two, but very rarely three. They are capable of engendering from the age of two years to that of fifteen or fixteen; and in fine, they resemble the stag in all his natural habits, and the greatest difference between them is the duration of their lives. From the testimony of hunters it has been remarked that stags live to the age of 35 or 40 years, and from the fame authority we understand that the fallow deer does not live more than 20. As they are smaller than the stag, it is probable that their growth is fooner completed. In all animals the duration of life is proportioned to that of the growth, and not to that of gestation, for here

here the gestation is the same; and in other species, as the ox, though the time of gesture is long, that of the duration of life is very short; from whence it follows that we ought not to calculate the duration of life by the time of gestation, but by that which Nature has required for perfecting the growth, reckoning from the birth to the almost entire expansion of the body.

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## THE ROE-BUCK.

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THE stag, as being the noblest inhabitant of the wood, occupies the most secret shades of the forest, and the elevated parts of mountains, where the spreading branches form a losty covert; while the roe-deer, as if an inferior species, contents himself with a more low-ly residence, and is seldom found but among the thick soliage of young trees. But if he is less

less noble, strong and elevated in stature than the stag, he has more grace, vivacity and courage; and when the fawns are attacked, he will defend them even against the stag himself. He is more gay and active, his shape is more agreeable and elegant; his eyes are more brilliant and animated; his limbs are more supple: his movements quicker, and with equal vigour and agility he feems to bound without effort. His hair is always clean, smooth, and gloffy; he never rolls in the mud like the stag; he frequents the drieft and most elevated places, where the air is the most pure; he has also more cunning and finesse, more difficult to chace, and derives a greater number of resources from his instinct. Though he has the disadvantage of leaving a strongerscent behind him than the stag, which excites in the dogs a greater degree of ardour, he knows better how to avoid their pursuit by a rapid flight and repeated doublings; for he delays not, like the stag, the application of art till his strength begins to fail him; but even in the first instance, when he finds his efforts of fpeed are not likely to fave him, he immediately begins to retrace his former steps and continues going backwards and forwards till, by his various windings, he has confounded the fcent and joined the last emanations to those of his former course: having

having done which, by a great bound he withdraws to one fide, lies flat upon his belly, and fuffers the whole pack to pass close by him without attempting to move.

The roe-buck differs also from the stag in his natural appetites, inclinations, and whole habits of living. Instead of herding together, they live in separate families; the fire, dam, and young, form a little community, and never admit a stranger into it. All other animals of the deer kind are inconstant in their amours, but the roe-deer never forfake each other. As the females generally produce two fawns, one of each fex, they are brought up together, and acquire an attachment fo strong that they never separate, unless by some missortune. This attachment is fomething more than love, for though they are always together, they feel the ardour of the rut not more than fifteen days in the year, that is, from the end of October to about the middle of November. They are not at that time, like the stag, overloaded with fat, have no strong fmell, no fury, nothing, in short, which alters their state; the only observable difference is that they drive away their fawns; the buck forcing them off to make room, as it were, for a fucceeding progeny. When the rutting feason is over, however, the fawns return to their

their dams, and remain with them some time, after which they quit them entirely to form separate families of their own.

The female goes with young five months and a half, and brings forth about the end of April or beginning of May. The hinds, as already observed, go more than eight, which is alone sufficient to prove their difference of species, that they can never intermix, nor produce an intermediate race. In this respect, as well as in figure and make, they approach the species of the goat, as much as they recede from that of the stag; for the goat goes with young nearly the same time, and perhaps the roe-deer ought to be regarded as a wild goat, which, by feeding folely on trees, carries branches on his brows instead of horns. When about to bring forth the female separates from the male, and conceals herself in the deepest recesses of the woods, to avoid the wolf, who is her most dangerous enemy. At the expiration of ten or twelve days, the fawns attain sufficient strength to follow her. When threatened with any danger, she hides them in some deep thicket, and by way of preserving them presents herself to be chaced. But all her care is not fufficient to prevent their being frequently carried off by dogs and wolves. This is indeed their most VOL. VI. critical

critical time, and in which this species, which is not very numerous, fuffers the greatest destruction, as I have found by experience. I often reside in a part of the country (Montbard in Burgundy) famous for roe-bucks, and where not a fpring passes without a great number being brought me, fome taken alive by men, and others killed by dogs; infomuch that, without counting those killed by wolves, I am convinced more are destroyed in the month of May than in all the rest of the year; and I have obferved, for more than twenty-five years, that as if there subsisted a perfect equilibrium between the causes of destruction and renovation, their number is nearly the fame in the fame districts. It is not difficult to count them, as they are no where very numerous, and keep together in separate families, and distinct from that of any In a coppice, for example, of 100 other. acres in circumference, there will be found one family, or from three to five individuals, for the females will fometimes have but one fawn, and at others three, but either case seldom happens; in another diffrict more extensive, there will be feven or eight, that is two families; and I have remarked that in each diffrict their numbers have been uniform, excepting in those years when the winters have been remarkably severe;

in that case the whole family is destroyed, but by the next year it is succeeded by another; and those districts to which they give the preference are always stocked with nearly the fame quantity of them. Notwithstanding this it is afferted, that this species, upon the whole, is diminishing in number; and, indeed, it is true, that there are provinces in France where not one of them is to be found; that though common in Scotland there are none in England; very few in Italy, and they are more scarce in Sweden than formerly, &c. But these effects might arise from the diminution of forests, or from the excessive rigour of some winter, like that of 1709, by which they were almost all destroyed in Burgundy, and a number of years elapsed before they were recruited. Besides they are not equally fond of every country, and even in the same they are partial to particular spots. They love hilly grounds, and never remain in the deep recesses of extensive forests, but prefer the skirts of those woods which are furrounded with cultivated fields, and open coppices, where the brambles, buckthorn, &c. grow in plenty.

The fawns continue with the old ones eight or nine months, and foon after feparating their horns begin to appear, fimple knobs without

L 2 antlers;

antlers; these they shed at the latter end of autumn, and have them renewed during the winter; differing in this from the stag, who sheds them in spring and renews them in the fummer. Several causes contribute to produce these different effects. In summer the stag takes a great quantity of nourishment, and grows very fat; in the rutting feafon he exhaufts himself so much that the whole winter is not more than sufficient to effect his recovery. At this time, fo far from there being a superabundance of nourishment, he experiences an absolute scarcity, of course his horns cannot fprout till spring, when his nourishment is again superabundant. The roe-buck, on the contrary, who never exhausts himself so much, has less occasion for repair; and as he is never encumbered with fat, as no change is made in him during the time of the rut, but he is always nearly the same, so he has, at all times the same superfluity; so that even in winter, and foon after the rut, he sheds and renews his horns; and it appears that these productions, which may be termed vegetable ones, are formed of an organic and superfluous matter, though still imperfect, and mixed with inanimate particles; fince in their growth and substance they preserve the vegetable qualities; whereas

whereas the feminal fluid, whose production is not fo early, is a matter altogether organic, divested of inanimate particles, and affimilated to the body of the animal. When the roebuck has completely repaired his horns he rubs them against the trees in the same manner as the stag, in order to strip them of the skin with which they are covered; and this he generally does about March, before the trees begin to shoot; hence it is not the sap of the wood which tinges the horns of the buck; yet they are brown in those that have brown hair, and yellow when the animal is red, confequently the colour of the horns arises folely, as has already been remarked, from the nature of the animal, and the impression of the air. The fecond horns of the roe-buck have generally two or three antlers on each fide; the third have three or four; the fourth, five; and they feldom have more; and the old ones are distinguished by the thickness of their stems. While their horns are foft they are extremely fensible of pain. Of this I witnessed a striking proof. With a ball from a gun the young shoot of a roe-buck's horn was taken clear off, and by which he was so stunned that he fell down as if he was dead; the shooter, who was near, seized him by the foot, but the animal fuddenly

fuddenly recovering his strength and feeling, dragged the man, though very strong and vigorous, above thirty paces, till he dispatched him with an hanger; it was then found that he had received no other wound than that of the hanger, and what the ball had made in striking the horn. It is also well known that flies are intolerable tormentors to the stag; while his horns are growing he withdraws to the thickest covert of the wood, where the flies least frequent, because the irritation is insupportable when they fix upon the tender horns. Thus there is an intimate communication between the foft part of this living wood, and the whole nervous system of the animal. The roe-buck, who has nothing to fear from these enemies, as he renews his horns in the winter, does not retire in this manner, but he walks with caution, and holds his head low for fear of striking it against the branches. In the stag, fallow-deer, and roebuck, there are two bony eminences on which their horns grow; these begin to shoot at the end of five or fix months, and foon arrive at their full growth; instead of enlarging as the animal advances in age they diminish every year, and are the most certain marks for diftinguishing the age of all the species. I think

it is easy to account for this effect, which at first appears fo fingular, but which ceases to be so when we reflect, that the horns which grow upon this eminence must press upon it during the whole time of their growth, which is for feveral months in the year; therefore, however hard they may be they must continually lower and contract by the compression which is re-iterated every time the roe buck repairs his horns. This is likewise the reason that though the trunk continues to increase in thickness, as the animal advances in years, yet the height of the horns, and number of branches, diminish so much that when he arrives at a great age there remain only two large prickets, or fantastic and ill-shaped knobs.

As the female goes only five months and a half with young, and as the growth of this fawn is more rapid than that of the young stag, so is his life much shorter; and I do not believe it ever extends beyond twelve or sistem years. I have reared several, but could never keep any above sive or six years. They are very delicate in choosing their food, require much air, exercise, and space to range in, which is the reason they cannot sustain the inconveniences of a domestic life, but in their younger years; for a roe-buck to live at his ease

ease and comfortable, he must be supplied with a female and a park of at least an hundred acres to range in. They may be tamed, but can never be rendered obedient or familiar; they always retain fomewhat of their wild nature, are easily terrified, and will then run against a wall with fuch force as fometimes to break their legs. However tame they may be, they are not to be trusted, for the bucks are apt to adopt many caprices; they will take an averfion to particular persons, and run at them with their horns with a force fufficient to knock a man down, and having done fo, they will continue to trample on him with their feet. The roe-buck does not cry fo frequently, nor with fo strong a voice as the stag. The young ones have a short and plaintive cry, their note being mi, mi! which they generally use when they are in want of food. This note is eafily imitated, and by using it the dams may be brought to the very muzzle of the hunteris gun.

The roe-bucks remain in winter in the thickest coppices and feed on briars, broom, heath, &c. In spring they repair to the more open brush-wood, and browse upon the buds and young leaves of almost every tree: this warm food, fermenting in their stomachs, ine-

brates

briates them to fuch a degree that they are then eafily furprised; for they know not whither they go; frequently come out of the woods, will approach flocks of cattle, and even the habitations of men. In fummer they inhabit the more lofty coppices, from which they feldom iffue, except in extreme heats to drink at fome cool fountain; for when the dew lies in quantities, or the leaves are moistened with rain, they never drink. They select the choicest kinds of aliment, being extremely delicate in their eating, neither feeding with that indifference nor avidity as the stag, and very seldom approach cultivated grounds. The flesh of these animals is excellent food, yet there is much distinction to be made in the choice of the venifon. The quality depends greatly upon the country in which they have lived; although in the most plentiful, both good and bad are to be found. The flesh of the brown roe-buck is more delicate than that of the red; that of those which have passed the second year is tough and illtafted, while that of the females, though farther advanced in years, is more tender. Those which are bred in plains and valleys are not good; those from moist lands still worse; there is but little tafte in those reared in parks, and, in a word, there are no good roe-bucks but those VOL. VI. M

those which have inhabited dry and elevated countries, interspersed with little hills, woods, arable lands and streams, where they have a sufficiency of good air, food, freedom, and above all, solitude; for such as have been often disturbed are thin, and the sless of those which have been often hunted before is tasteless and insipid.

This species, which is not so numerous as that of the stag, and seldom found in many parts of Europe, is much more abundant in America, where there are two forts; the red which are large, and a brown one confiderably fmaller, which has a white fpot behind; and as they are found both in the northern and fouthern parts of America, it is probable they differ more from each other than from those in Europe. In Louisiana they are extremely common, and are larger than those in France. They are also found in Brasil; for the animal which is there called Cujuacu-apara, differs not more from the European roe-buck, than the Canadian stag from ours. There is only fome little variation in the form of the horns. "In Brafil, fays Pifo, there are two forts of the roe-buck, one of which has no horns, and is called the Cujuacu-été, and the other is furnished with horns, and is called Cujuacu-apara. The

horned

horned ones are much less than the others; their hair fmooth, gloffy, and a mixture of brown and white, when they are young, but the white is loft as they advance in years. The hoof is divided into two black toes, upon each of which there appears to be grafted another and smaller one; the tail is short, the eyes large and black, the nostrils open, the horns are of a middling fize, and fall off annually. The females go five or fix months with their young;" and another author adds, "That their horns are divided into three branches, and that the lowest branch is the longest, and divides into two." We may fairly conclude from the above descriptions, that the apara is a variety of the species of the roe-buck; and Ray supposes that the Cujuacu-été and the Cujuacu-apara are both of the fame species, and that one is the male and the other the female. I should acquiesce in this opinion, if Piso had not expressly stated, that those which have horns are fmaller than the others; for it does not appear probable that the females should be so much larger than the males, when in every other place the contrary is the case. At the same time, although the Cujuacu-apara may be nothing more than a variety of our roe-buck, to which M 2 the

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the capreolus marinus of Johnston may be added, I cannot pretend to determine with respect to the cujuacu-été, at least until we have received more certain information.

## SUPPLEMENT.

IN my original work I remarked that wild animals were generally either white, brown, or grey; and that fuch as fallow-deer, rabbits, &c. became white from being kept in a domestic state, but M. l'Abbe de la Villetta, in a letter dated June 17, 1773, informs me, that they are sometimes so in their natural state; for a man belonging to his brother, who had an estate near Orgelet, in Franche-comte, brought home two old roe-deers, one of which was of the common colour, and the other a semale persectly white, having only black hoofs, and a black spot at the end of her nose.

M. de Fontenelle, the king's physician, at New Orleans, in a letter to me, says, that "Roe-bucks are very common in North America, that they entirely resemble those of Europe, except except being fomewhat larger, particularly in Louisiana, where he thinks they are nearly as big again as those in France." He says they are very eafily tamed, as does M. Kalm, who afferts, that he had a roe-buck which went every day to the woods, and returned to his house regularly every night. According to M. de la Borde there are four kinds of stags at Cayenne, indifcriminately called hinds, whether males or females. "The first are called wood, or red hinds, which constantly inhabit the thickest part of the forests. The second, which are bigger, though of the same colour, are called the barallou hind; both of these species have two considerable glands on each fide of the nostrils, containing a white foetid humour. The third is called the Savanna hind, which is of a grey colour, and more common than either of the others; neither are they so large, though their horns are longer and more branched: they are called Savanna hinds because they seek out the lands covered with marshes; they feed upon the manioc, and are very destructive to plantations. Their flesh is excellent food, and far preferable to that of European stags. They are so tame at Cayenne that they run about the streets, and go in and out of town without discovering the *îmalleft* 

fmallest degree of apprehension. The females are faid even to go into the woods after wild males, and to return again when they have got fawns. The last is called the caricou; he is less than either of the others, his colour is a light grey, and his horns are straight and pointed. He keeps himself entirely to large woods, and never ventures near parts that are inhabited; they are, nevertheless, very easily rendered tame and familiar; and the females produce but one fawn at a time." Notwithflanding the stress which has been laid upon these remarks, I am of opinion, that all these pretended species of stags or hinds, as above described, are merely varieties of the roe-buck. which are more numerous in the new than in the old continent, and which I apprehend will fully appear to fuch as compare those defcriptions with our history of the mazame, or Mexican deer.

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## THE HARE.

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THE species of animals which are most numerous are not the most useful. Nothing can be more noxious than the multitudes of rats, mice, locusts, caterpillars, and many other infects, of which it would feem that Nature rather admitted than ordained the extraordinary increase. But those of the hare and rabbit are advantageous to us both from their number and utility. Hares are abundantly spread over the face of the earth; and rabbits, though originally natives of particular climates, multiply fo prodigiously in almost every place, to which they are transported, that, instead of being extirpated, no small art is required in order to diminish their too-often inconvenient number. When we reflect on the aftonishing fecundity of each particular species, and on the quick and prodigious multiplication of certain animals which

which come into existence, as it were, to defolate the fields and ravage the earth, we are aftonished they do not oppress Nature with their numbers, and after having devoured her productions become themselves victims to the destruction they have made. We cannot view without terror those thick clouds, those winged phalanxes of famished insects which feem to menace the whole globe, and whether lighting on the fruitful plains of Egypt, or of India, in an instant destroy the labours and hopes of a whole people; and sparing neither grain, fruit, herbs, nor leaves, strip the earth of its verdure, and change the richest countries into barren deserts. We behold rats descending from the northern mountains in innumerable multitudes, rushing like a deluge of living matter, overflow the plains, spread themselves over the fouthern provinces, and after having destroyed in their passage every thing that lives, or vegetates, finish their career with infecting the earth and air with their putrid carcales. We behold in the fouthern regions myriads of ants issuing from the deserts, which, like an exhaustless torrent, arrive in thick and succeffive columns, take possession of every spot, drive away men and animals from their habitations, and never retire till they have caused a general

general devastation. And in those times, when man himself was but half civilized, and subject to all the laws, and even excesses, of Nature, were there not similar inundations of the human species? Have there not been Normans, Huns, and Goths, whole nations, or rather tribes, of serocious people, without dwellings, and without distinction, who have suddenly rushed from their caves, and marched in tumultuous herds, and without any force, but what consists in their numbers, overthrown empires, destroyed nations, and having ransacked the earth, concluded by re-peopling it with a race not less barbarous than themselves.

These æras, these great events, though so strongly marked in the History of Mankind, are yet only flight viciffitudes in the ordinary course of animated nature, which is in general always uniform and the same; its movements are regulated by two unchangeable wheels; the one, unbounded fecundity of every species; the other, the innumerable causes of destruction which are perpetually reducing the produce of that fecundity to a determinate measure. fo as to preserve nearly the same number of individuals in each species. And as multitudinous animals, which appear of a fudden, disappear in the same manner, without aug-VOL. VI. menting

menting their race, so does the human species always remain the same. What variations may happen in the latter are only more flow, because the life of man being longer than that of fmall animals, the alternate changes of increase and diminution must necessarily require a greater portion of time. But time itself is only an inftant in the succession of ages, and only strikes us the more forcibly, from having been accompanied with horror and destruction; for taking all the inhabitants of the globe together, the number of the human race, like that of other animals, will, at all times, appear to be nearly the fame; as this depends entirely upon an equilibrium of physical causes, an equilibrium to which every thing has long been reduced, and which neither the efforts of man, nor any moral circumstances whatever, can diffolye; as those circumstances themselves are also dependent on physical causes. Whatever care man may bestow on his own species. he will never be able to render it more numerous in one place without destroying or diminishing it in another\*. As soon as any

<sup>\*</sup> We were at first inclined to combat this position of our learned author with those reasons, founded upon facts, which may be adduced against it; but he has himself so completely replied to it at the end of his differtation upon wild animals,

one country is over-stocked with inhabitants they diffuse themselves over other countries, or destroy each other, and not unoften establish laws and cuftoms calculated to prevent an excess of multiplication. In climates of exuberant fertility, as China, Egypt, and Guinea, they banish, mutilate, drown, or sell their infants; in Catholic countries they condemn them to perpetual celibacy. Those who actually exist find no difficulty in arrogating to themselves the disposal of the rights of those who have no existence. Considering themselves as neceffary, they annihilate contingent beings, and scruple not to suppress future generations for their own ease and convenience. Mankind. without perceiving it, treat their own species exactly in the same manner as they do other animals; they cherish and multiply, or neglect and destroy them, according as it suits their purpose; and as all moral effects depend upon physical causes, which, ever fince the earth affumed its form, are fixed and permanent, it follows that in the human, as well as in the N<sub>2</sub>

animals, page 26, of this volume, that any thing further than repeating his own observation must be unnecessary; for he there says, that, in "process of time, we may reasonably suppose the surface of the earth will be equally inhabited," which is surely impossible without a considerable increase.

other animal species, the number must likewise be uniform and unalterable. It is to be obferved that this fixed state, this permanent number, are not to be considered in an absolute fense; all physical and moral causes, and all the effects which flow from them, are comprifed and balanced within certain limits, more or less extended, but never so large as to destroy the equilibrium. As the whole universe is in a state of perpetual motion, and as all the forces of matter acts against and counterbalance each other, so every thing is brought about by a kind of oscillation, to the middle points of which we refer the ordinary course of Nature, and whose extremes are the farthest removed from that course. In effect, therefore, we find, that an excels of fecundity, either in animals or vegetables, is the usual fore-runner of sterility. Plenty and scarcity present themselves so alternately, and often follow so close upon each other, that a tolerable judgement may be formed of the product of one year by that of the preceding. The apple, plum, oak, beech, and indeed most fruit and forest trees, do not bear plentifully two years together. So likewise it is with caterpillars, May-bugs, flies, field mice, and many other animals, who if they multiply to excess one

year,

year, they will produce but a very small number the next. What, indeed, would become of all our fruits of the earth, of our most useful animals, or even of man himself, if these infects were to be proportionally increased after a fertile feafon? But this cannot be, as the causes of destruction and sterrility immediately follow those of an excessive multiplication. Independent of contagion, a necessary confequence of too great a mass of living matter affembled in one place, there are, in every species, certain causes of death, as we shall hereafter have occasion to mention, and which are sufficient to counterbalance any preceding excess of fecundity. I must again observe that this is not to be taken in an absolute or strict sense, especially with respect to those species which do not remain entirely in a state of nature. Those which man takes pains to rear are more abundant than they otherwise would be; but as his attention has its limits, so the increase which flows from it has long fince been confined by unalterable bounds; and though, in civilized countries, the human species, and domestic animals, are more numerous than in other climates, they are never so in excess; because the very power which calls them into existence, destroys them when they become troublesome.

In those districts which are reserved for the chace, four or five hundred hares are fometimes killed in the course of one day's sport. These animals multiply amazingly; they engender at all feafons, and are in a condition to propagate before the first year of their life is expired. The females do not go with young above thirty or thirty-one days; they produce three or four, and are immediately after ready to receive the male; they likewise receive him during the time of gestation, and by a particular formation of their organs are often found to have a super-foetation; for the vagina and the matrix are continuous, and the latter has neither neck or orifice into the womb, as in other animals; yet each horn has an orifice which opens into the vagina and dilates during the time of bringing forth; and which forming two distinct uteris, act independently of each other; so that the females of this species are capable of conceiving and bringing forth by each matrix at different times; and consequently superfection must be as common among these animals, as it is rare among those which have not this double organ. It is plain, therefore, that the females may be impregnated at all times. By another fingularity in their conformation they are found to be as lascivious as they

they are fruitful; the gland of the clitoris is prominent and almost as large as the sexual distinction of the male; and as the vulva is hardly visible, and the males when young have no exterior marks, it is often difficult to distinguish the sexes. It is these circumstances which have given rise to the opinions that there are many hermaphrodites among these animals, that the males sometimes bring forth, and that some are alternately males and semales and perform the office of either sex; because the semales being more lascivious than the males will get upon them, and because they so much resemble each other externally, that unless very closely examined one sex may be mistaken for the other.

The young ones have their eyes open when brought forth; the mother suckles them about twenty days, after which they separate and provide for themselves; they do not withdraw far from each other, nor from the place of their birth; yet they live in solitude, each composing itself a form at the distance of sixty or eighty paces; thus when we find a leveret we are almost certain of finding one or two more in the neighbourhood. They feed more by night than day; and chiefly upon herbs, leaves, fruits, and grain, but above all they prefer those plants which yield a milky juice; they even

eat the bark of trees in winter, except that of the alder and lime, neither of which they ever touch. When reared at home they are fed with lettices and other herbs; but the flesh of these domestic fed hares has always a bad taste. They sleep and repose themselves in their forms during the day, and only live, as it were, in the night; when they range about, feed, and copulate; they may be seen by moonlight playing, leaping, and pursuing each other, but the smallest noise, even the rustling of the leaves, is sufficient to alarm and make them run different ways.

Some authors have afferted that hares chew the cud; but I cannot believe that opinion to be well founded, as they have but one stomach, and the conformation of that, as well as the other intestines, are altogether different from those of ruminating animals. The coecums of the latter are small, while those of hares are extremely large; and if we add to the capacity of the stomach this large coecum, we shall easily conceive, that being capable of receiving a great quantity of food, this animal may live upon herbage alone, like the horse and the ass, which have also a large coecum and but one stomach, and consequently cannot ruminate.

Hares

Hares fleep much, but always with their eyes open. They have neither eye-lids, nor cilia, and feem to have bad eyes; but, as if for a recompence for that defect, their hearing is exceedingly acute, and their ears are very large in proportion to the fize of their bodies. They move these long ears with great facility, and use them as an helm to direct their course. which is so rapid that they easily outstrip all other animals. Their fore legs being much shorter than their hind ones they can more eafily mount than descend, for which reason when purfued they always make towards the rifing grounds. Their running is a kind of leaping gallop, and they proceed without making the smallest noise, as their feet, even underneath, are covered with hair, and perhaps they are the only animals which have hair growing within fide their mouths. The hare lives not above feven or eight years; he completes his growth in one, and the duration of its life is proportioned thereto, and he lives to about feven time that space. Some indeed affert that the males live longer than the females, but that I much doubt. They pass their lives in folitude and filence, and never exert their voices but when feized or wounded; their cry is fharp and ftrong, and not unlike the VOL. VI. human

human voice. They are not so savage as by their habits and manners might be supposed; they are gentle, and susceptible of a species of improvement. They are easily tamed, but never acquire that degree of attachment which is requisite to render them domestic, for those which are taken very young, and brought up in a house, will take the first opportunity to escape and sly into the country. As they have a good ear, as they sit of their own accord upon their hind legs, and use the fore legs like arms, some have been so tutored as to beat a drum, to perform gestures in cadence, &c.

In general the hare possesses sufficient instinct for its preservation, and sagacity to
escape its enemies. It prepares itself a form,
or nest; in winter he chuses a spot exposed to
the south, and in summer one to the north.
To conceal himself from view he hides among
hillocks of the same colour with his own hair.
"I have seen," says du Fouilloux, "a hare so
cunning, that upon hearing the huntsman's
horn he started from his form, and, though at
the distance of a quarter of a league, hasted
to a pond, and there hid himself among the
rushes in the middle of it, and thus escaped the
pursuit of the dogs. I have seen a hare, which
after running more than two hours before the

dogs,

dogs, dislodge another, and take possession of his form. I have feen others, fwim over two or three ponds, of which the smallest was not less than eighty paces broad. I have seen others, after a chace of two hours, enter a sheep cot, and remain among the cattle. I have feen others, when closely purfued, take refuge among a flock of sheep, from which they would not be separated. I have seen others, upon hearing the noise of the hounds, conceal themselves in the earth. I have seen others, which having gone along one fide of the hedge returned by the other, so that there was only the thickness of the hedge between them and the dogs; and I have feen others, after a chace of half an hour, mount an old wall fix feet high, and take refuge in a hole covered with ivy." But these facts are doubtless the greatest efforts of their instinct, for their common resources are less refined and intricate. They, in general, when purfued, content themselves with running rapidly, and afterwards tracing and retracing their own steps. They never direct their course against the wind but always run with it. The females do not run fo far out as the males, but they double more frequently. Hares, in geperal, if hunted upon their native spot, do not 02 remove

remove a great way from it, but return to their form, and if chaced for two successive days they make exactly the fame doublings on the second as they did on the first. If a hare runs straight forward, and to a great distance, it is a proof of his being a stranger to that spot. This generally happens during their most particular times of rutting, which are in January, February and March, when the male hares finding but few females in their own diffricts will roam for several leagues in search of them; but immediately upon being roused by the dogs they make towards their native abodes, and never return again. The females do not thus go abroad; they are larger than the males, but have less strength and agility, and are more timid, for they never allow the dogs to come so near their forms as the males, and make use of more doublings and artifice. They are also more delicate, and are susceptible of the impressions of the weather; they dread the water, and even avoid the dews; whereas among the males there is a kind which are fond of water, and are chaced in marshy and watery grounds, but the flesh of this fort has a very bad tafte; and, in general, the flesh of all those which inhabit low vallies is whitish and infipid, while those in elevated countries, where the

the wild thyme, and other fine herbs abound, are delicious to the palate. It has also been remarked, that those which live in the centre of the woods, even in the same countries, are not so good as those that inhabit the borders, or live among the cultivated fields and vineyards; and that the flesh of the female is always more delicate than that of the male.

The nature of the soil has a great influence on hares, as well as on all other animals. The hares of the mountains are larger and fatter than those of the plains, and are also of a different colour, the former being browner, and having more white under the neck than the latter, which are inclined to red. On high mountains, and in northern countries, they become white in winter, and recover their ordinary colour in the summer; it is a very few, and those perhaps very old ones, that continue white, for all of them change more or less white as they advance in years.

The hares of Italy, Spain, Barbary, and other warm climates, are smaller than those of France and more northern nations; and according to Aristotle they were of a less size in Egypt than in Greece. They are exceedingly plentiful in Sweden, Poland, France, England, Germany, Barbary, Egypt, the islands

of the Archipelago, particularly Delos, which was formerly called Lagaia, from the number of hares found in it. They are also plenty in Lapland, where they continue white for the whole ten months of the winter, and refume their yellow colour during the two months of the fummer only. It appears, then, that all climates are nearly equal to them. However it is observed that they are less numerous in the eastern countries than in Europe; that there are scarcely any in South America, though they are numerous in Virginia, Canada, in the lands that border Hudson's Bay, and in the Straits of Magellan. But these North American Hares are perhaps of a different fpecies from ours, for travellers tell us, that they are not only larger but that their flesh is white, and has a very different tafte to that of the European hares. They add, that in North America these animals never shed their hair, and that their skins make excellent furs. In countries of excessive heat, as Senegal, Gambia, and particularly in the districts of Fida, Apam, and Acra, and in other countries fituate under the torrid zone in Africa and America, as New Holland, and the isthmus of Panama, there are also animals which travellers have taken for hares, but which feem rather to be a species of rabbit, 10

rabbit, which comes originally from the hot countries, and is never found very far to the north; whereas the hare is always fatter in proportion to the coldness of the country which he inhabits.

The flesh of this animal, though so much esteemed at the tables of Europeans, is not at all relished by the eastern nations. It is true that the slesh of the hare, as well as that of the hog, was forbidden as food by the law of Mahomet and the ancient Jewish law; though the Greeks and Romans held it in great estimation: "Inter quadrupedes gloria prima lepus," says Martial. In sact, both the slesh and the blood of this animal is excellent; but the sat adds nothing to the delicacy of the slesh; for the hare, when at its liberty in the open country, never grows sat; whereas he often dies with the excess of it when reared in a house.

The chace of the hare is an amusement, nay often the principal occupation of people in the country. As it requires but little apparatus and expence, and is even useful, it is an amusement universally agreeable. The hunter in the mornings and evenings watches at the corner of some wood for the hares going out or returning; and in the day he seeks to dislodge him from his form. When the air is fresh and the

fun shines bright, a hare, which has been chaced, may be discovered on its form by the fumes which arise from its body; and I have seen fome fo expert in this observation go half a league to kill a hare on its feat. This animal will fuffer itself to be very nearly approached, especially if the advance is made with a seeming inattention and obliquity. They are more afraid of dogs than men, and upon either smelling or hearing the former will immediately take flight; though they run swifter than the dogs, yet as they do not take a direct course but turn and double round the fpot from whence they were started, the greyhound, who rather hunts by fight than fmell, generally intercepts, feizes, and deftroys them. They remain in the fields during the fummer, in autumn among the vines, and in winter among the bushes or in the woods, and in all feafons they may be forced to the chace with proper hounds. They may be also taken by birds of prey. Owls, buzzards, eagles, foxes, wolves, and men make continual war upon them. These animals have so many enemies that they escape them only by chance, and are feldom allowed to enjoy that short life they have allotted to them by Na-

SUPPLEMENT.

## SUPPLEMENT.

FROM M. Hettlinger, I understand that the hares not uncommonly burrow in the clefts of the rocks among the mountains in the neighbourhood of Biagory, which is contrary to their practice in these climates, where they make forms and leave going underground to rabbits; that the former are not partial to those places where the latter are numerous, is pretty generally known; to which Pontoppidan has added the remark, that rabbits do not multiply where hares are in abundance; he fays: "In Norway, rabbits are feldom met with, but hares are very numerous; they are either brown or grey, during fummer, and constantly change to white in the winter; they catch mice and eat them, like cats, and are smaller than those found in Denmark." Whatever truth their may be in the other parts of his relation, their eating of mice is highly improbable, but it is not the only instance of his partiality for the marvellous.

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M. le Vicomte de Querhoënt, in speaking of the hares of the Isle of France, says they are not bigger than the rabbits of France; that their hair is smoother, that they have a large black spot upon the hind part of their heads, and that their sless is very white; and M. Adamfon gives nearly a similar description of those of Senegal, excepting the black spot upon their necks.

## THE RABBIT.

ALTHOUGH the hare (fig. 58.) and the rabbit (fig. 59.) are so very similar both in their external and internal conformation, yet they never intermix but form two distinct and separate species. As hunters, however, have afferted that the male hares, in rutting time, run after and cover semale rabbits, I have endeavoured to discover what would be the consequence of such an union. For this purpose I caused

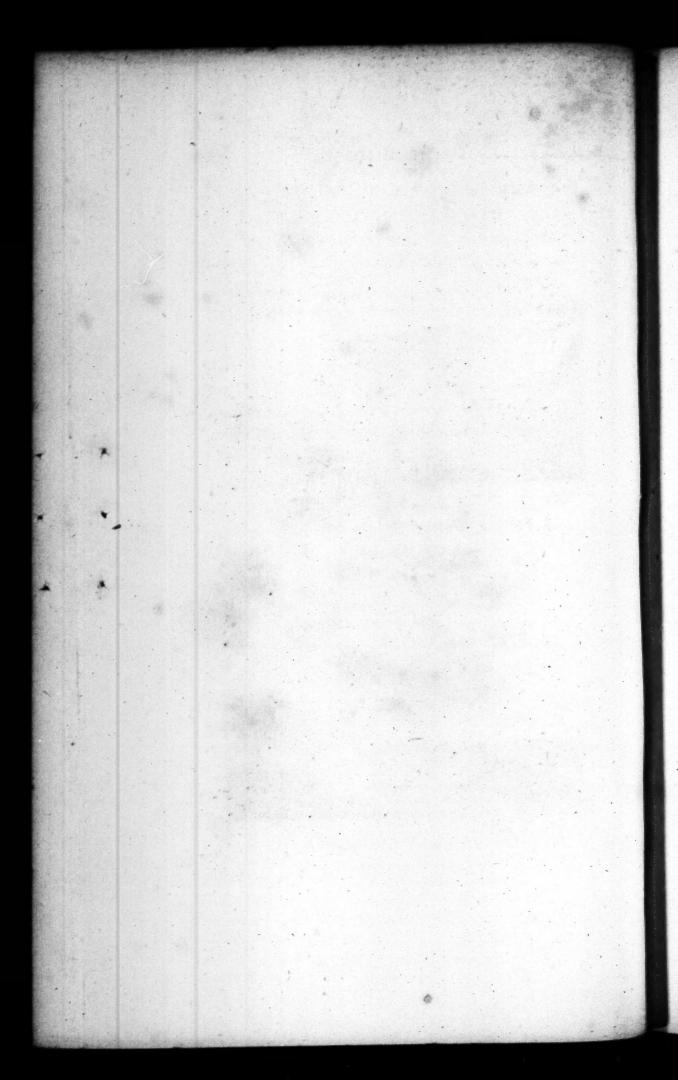






Female

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caused some male hares to be reared with some doe rabbits; and some male rabbits with doe hares; but those attempts were attended with no other effects than convincing me, that though these animals are so similar in form, they are so different in nature as to be incapable of producing an intermediate race. One young hare, and a young female rabbit, nearly of the fame age, did not live together three months; for, having acquired a little strength, they became dreadful enemies, and their continual battles terminated in the death of the hare. Of two male hares, each of which I confined with a doe-rabbit, one shared the same fate, and the other being very ftrong and ardent, never ceafed from tormenting the rabbit, by endeavouring to cover her, and in the end occasioned her death, either by wounds he gave her, or by too violent careffes. Three or four doe-hares. whom I matched with male rabbits, experienced the same sate, though in a still shorter time. Though there was never any produce, yet I am pretty certain that a copulation fometimes took place; at least that, notwithstanding the refistance of the female, that the male was gratified; and there was more reason to expect a product from this union, than that of the rabbit and hen; of which, according to a cer-

and well and real Part P 2 hours Out found to se tain

tain author\*, the fruit would be, chickens covered with hair, or rabbits covered with feathers! This strange conclusion was drawn from the act of a vicious male rabbit, who being unaccommodated with a semale, made use of a hen as he might have done any other moveable: nor was there the least probability to expect any product from two animals whose species were so distant, since nothing results from an union between the hare and rabbit, which seem so nearly to approach each other.

The fecundity of the rabbit is even greater than that of the hare; and without crediting Wotton's affertion, that a fingle pair being left upon an island, multiplied to fix thousand at the end of a year; it is certain they increase so prodigiously, in countries which are proper for their breed, that the earth cannot supply them with fufficient subsistence. They destroy herbs, roots, grain, fruits, and even young trees and shrubs; and if it were not for dogs and ferrets, they would reduce the country to a defert. The rabbit not only produces more frequent than the hair, but has more ways to escape its enemies, and to avoid the fight of man. The holes which it digs in the earth, where it retires in the day, and where it brings spo a of gardeous about he men bas sforth

See a French Tract entitled, L'Art d'Elever des Poulets,

forth its young, protect it from the wolf, fox, and birds of prey. Here the whole family live in perfect fecurity; here the females nourish their young, for the space of two months, nor ever conduct them abroad until they have fufficient strength to provide for themselves. By this means they avoid the dangers of their early age; while hares, on the contrary, are destroyed in greater numbers at this period, than during all the rest of their lives. This circumstance alone may suffice to prove that the rabbit is superior to the hare in point of sagacity. They are alike in their conformation, and have equal power to dig retreats. Both are equally timid; but the one, possessed of less art, is contented with forming a refidence on the furface of the earth, where it remains continually exposed, while the other, by a superior instinct, digs into the earth, and fecures itself an afylum; and as a proof this is the effect of fentiment, we never fee the domestic rabbit taking that trouble. They neglect fecuring themselves retreats, from the same reason that domestic birds neglect the building of nefts, because they are equally protected from the inconveniences which both species in their natural state must necessarily have been liable to. It has been often remarked, that when a warren is replenished with domestic

meftic rabbits, they and their produce remain upon the furface, like hares; and that it is not until they have experienced a number of hardships, and passed several generations, they begin to dig holes in the earth for an asylum.

The domestic rabbits, like all other domestic animals. vary in colour; white, black, spotted, and grey, are, however, the only colours which properly belong to Nature. The black rabbits are the most scarce. The wild rabbits are all of a greyish brown, which is also the predominant colour among the tame ones; for in every litter we constantly find brown rabbits even though the old ones were both black or both white, or the one white and the other black. It is feldom that more than one or two will refemble fuch parents, whereas the brown rabbits, though domestic, feldom produce any but of their own colour, and it is, as it were, by chance, if they bring forth white, black, or mixed ones.

These animals are capable of engendering by the age of five or six months. It is afferted they are constant in their amours, and when attached to a semale that they never forsake her. The latter is always ready to receive the male: she goes with young 30 or 31 days, and brings forth from sour to eight at a time.

Like

Like the doe hare she has a double matrix, and consequently may produce at two different It appears, however, that fuperfoetations are less frequent in this species than in that of the hare, which is perhaps owing to the females being more constant, and because they copulate less out of season. A few days before bringing forth they dig a fresh burrow, not in a straight line, but in a crooked direction, at the bottom of which they make an excavation; after which they tear a quantity of hair from off their bellies, and thereof make a bed for their little ones, For the first two days they never quit them; they never ftir abroad but when forced by hunger, and then return as foon as they have satisfied their appetite, which they do amazingly quick. Thus they tend and fuckle their young for more than fix weeks, and during which time the buck has no knowledge of them, for he never enters the burrow dug by the doe; and the frequently, when she leaves her little ones, stops up the entrance to it with earth diluted with her own urine. But when they begin to come to the mouth of the hole, and to eat groundfel, and other herbs, which the mother picks out, he then begins to know them; he takes them between his paws, endeavours to smooth their hair,

hair, and licks their eyes. Each, in succession, partakes equally of his cares; at which time the mother bestows many caresses upon him, and generally proves with young a few days after.

From a gentleman in my neighbourhood, who had amused himself many years in rearing rabbits, I received the following remarks: "I began," fays he, "with only one male and one female; the former perfectly white, and the latter brown. Of their produce, which was very numerous, the greatest part were brown, many of them white and mixed, and some few black. When the female is in feason the male scarcely ever leaves her; his temperament is fo warm that I have feen him go with her five or fix times within the hour. At this time the female lies on her belly, with her fore legs stretched out, and utters little cries, which feem rather to be tokens of pleasure than pain. Their manner of coupling is fimilar to that of the cat, only the male scarcely bites the neck of the female. These animals pay great respect to parental authority, at least I judge so from the great deference which all my rabbits shewed for their first ancestor, whom I could eafily diftinguish by his whiteness, being the only male that I preserved of that colour. The family \*

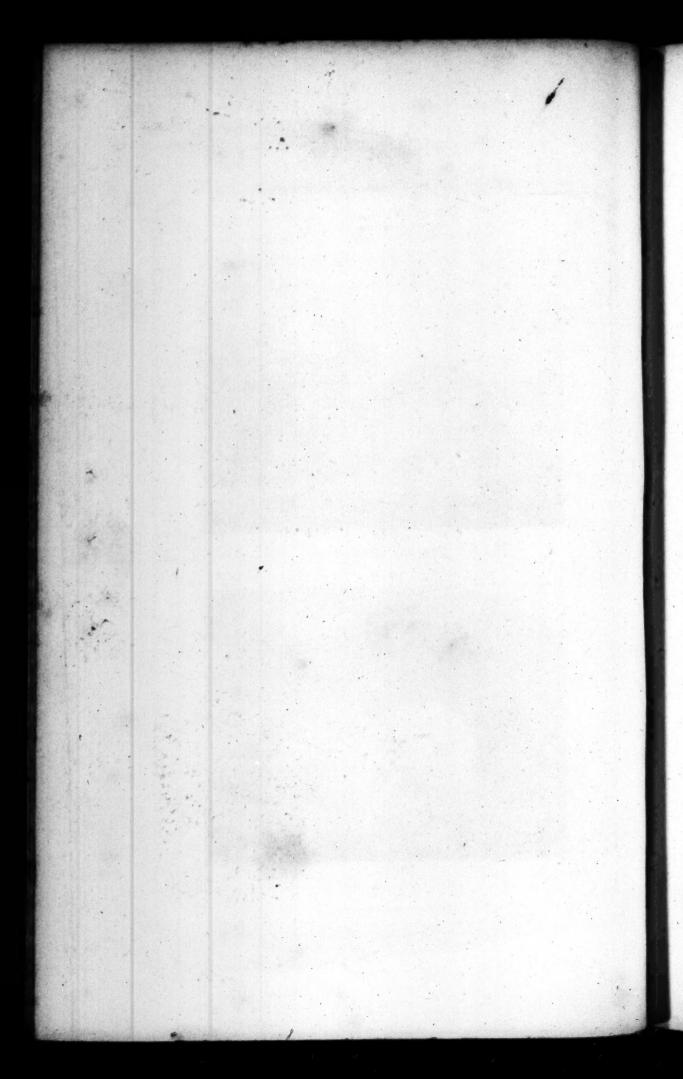
Engraved for Barrs Buffon



Hares Male and Fonale



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family very foon augmented, but even those which had become fathers were still subordinate to him. Whenever they fought, whether for females or food, their great progenitor would run to the place of dispute, and as soon as he was perceived order would be immediately rerestored. If he surprised them in the act of affaulting each other, he would first separate and then chaftise them on the spot. Another proof I had of his dominion over his posterity was, that having accustomed them to retire into their place upon the blowing of a whiftle, whenever I gave the fignal, how diffant foever they might be, this old one put himself at their head, and though he came first he made them all pass before, nor would he enter till last himself. I fed them with wheat, bran, hay, and a good deal of the juniper-tree; of this last they ate all the berries, the leaves, and the bark, and left nothing but the hard wood. This food gave their flesh an agreeable flavour, and rendered it as good as that of the wild rabbits."

These animals live eight or nine years; and as they pass the greater part of their lives in burrows, where they remain in repose and tranquility, they grow much fatter than hares. Their slesh is also very different, both in colour VOL. VI.

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and tafte. That of the young rabbit is very delicate, but the flesh of the old ones is always hard and dry. They were originally, as I have already observed, natives of hot climates. They were known to the Greeks; and it appears that the only countries in Europe where they anciently existed were Greece and Spain. From thence they were brought into the more temperate climates of Italy, France, England, and Germany, where now they are naturalized; but in colder climates, as Sweden, and other northern parts, they can scarcely be reared in the house, and perish if they are left in the fields. On the contrary, they thrive in excessive heat, for we meet with them in the fouthern parts of Asia and Africa, as about the Persian Gulph, the Bay of Saldana, in Lybia, Senegal, and Guinea. We also meet with them in our American islands, whither they have been transported from Europe, and have thriven extremely well.

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## CHAPTER IV.

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## OF CARNIVOROUS ANIMALS.

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LITHERTO we have only treated of useful animals. Those which seem injurious are a far greater number; and though it univerfally appears that what is hurtful exists in greater plenty than what is ferviceable, yet, as in the phyfical world, evil is fubservient to good, so there can, in fact, be no evil, fince nothing, in effect, injures Nature. If to destroy animated beings is hurtful, is not man, confidered as forming a part of the general system of those beings, the most injurious and pernicious of them? He alones facrifices and annihilates more living individuals than all the carnivorous tribes. No farther, then, are they injurious than as the rivals of man, as they have the same appetites, the same fondness for animal food; and as, to fatisfy a want of the most urgent necessity, they occasionally dispute with him for that prey which he had referved

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for his own excesses; for more does man facrifice to his imtemperance than to his real wants. Born to destroy those beings which are subordinate, he would exhaust Nature, if she was not exhaustless, and by a fertility, superior to his depredations, renovates the destruction he continually makes. But it is so ordained that death should contribute to life, and that reproduction should spring from destruction. However great, therefore, may be the waste made by man and carnivorous animals, the total quantity of living matter is never diminished, and if they hasten deaths they are also the cause of new births being produced.

Large animals form but the smalless part of animated nature. The earth swarms with the smaller kinds. Each plant, each grain, each particle of organic matter, contains millions of living atoms. Vegetables appear to be the first fund of subsisting Nature; but this fund, however abundant and inexhaustible, would hardly be sufficient for the still more abundant tribes of insects. Their increase, altogether as numerous, and often more quick, than the reproduction of plants, is a sufficient indication of their superior numbers. Plants are only reproduced once a year, whereas in insects, especially

especially among the smaller species, one season gives birth to feveral generations. They would multiply, then, more than plants, if they were not devoured by other animals. Among infects there are numbers which live upon other infects; there are some, as the spiders, which devour with indifference their own as well as other species; they serve for food to the birds; and fowls, both wild and tame, are destined for the nourishment of man, or the prey of carnivorous animals. Thus violent deaths feem established to be as equally necessary as natural ones; they are both modes of destruction and renovation; the one serves to preserve Nature in a perpetual fpring, and the other maintains the order of her productions, and limits the number of each species. They are both effects dependent upon general causes; every individual falls of itself at the end of a certain period, or if prematurely destroyed it was from being superabundant. How many are there whose existence is, as it were, anticipated? How many flowers are cut down in the fpring? How many feeds are annihilated before their developement? Man and carnivorous animals feed upon individuals which are either formed, or nearly so; flesh, eggs, grain, and feeds of every species, form their ufual

usual nourishment, by which alone the exuberance of Nature might be restrained. Let us consider any of the inferior species which ferve as food to others; herrings, for example, present themselves in millions to our fishermen, and after having fed all the monfters of the northern seas they contribute to the subfistence of all the nations in Europe for a certain part of the year. If prodigious numbers of them were not destroyed what would be the effects of their prodigious multiplication? By them alone would the whole furface of the fea be covered. But their numbers would foon prove a nuisance; they would corrupt and destroy each other. For want of fufficient nourishment their fecundity would diminish; by contagion and famine would they be equally deftroyed; the number of their own species would not be increased, but the number of those that feed upon them would be diminished. As this remark is alike applicable to any other species, fo it is necessary they should prey upon each other; the killing of animals, therefore, is both a lawful and innocent cuftom, fince it is founded in nature, and it is upon that feemingly hard condition they are brought into existence.

The motives, however, which incline us to entertain doubts of this truth do honour to humanity.

humanity. Animals, those at least which have fenses, and are composed of flesh and blood, are, like us, capable of pleasure, and subject to pain; it is, therefore, a cruel infensibility to facrifice, without necessity, those who approach or live with us, and whose feelings are reflected by the figns of pain; for by those, whose nature is very different to ours, we can be but little affected. Natural pity is grounded on the relations we have with the object that fuffers, and it is more or less lively as the resemblance and conformity of the structure is more or less great. The word compassion indicates that we suffer, that we are acted upon. The mind partakes less of this pity than the body; and animals are fusceptible of it as well as man; the voice of pain moves them, they run to the affiftance of each other, and they shrink from the dead carcass of one of their own species. Thus horror and pity are less passions of the mind than natural affections, which depend on the fenfibility of the body, and on the similitude of its conformation; therefore this sentiment must diminish in proportion as the nature of one animal differs from that of another. When we strike a dog, or kill a lamb, it excites some pity; but none do we feel in cutting down a tree, or swallowing an oyster. Those animals, whole

whose organization is fimilar to ours, must experience fimilar fensations, and those sensations must be proportioned to the activity and perfection of their fenses; those whose senses are obtuse cannot have exquisite feelings, and those who are defective in any organ of sense, must also be defective in all the sensations which have any affinity thereto. Motion is a necessary effect of the exercise of sentiment. We have already evinced, (in treating of the nature of animals) that in whatever manner a being is organized, if it has fentiment, it cannot fail to express its feelings by outward motions. Thus plants, though rightly organized, are infenfible beings, as well as all animals which have no apparent motion; those animals also which, like the fenfitive plant, move only their bodies and are denied progressive motion, have a very fmall degree of fentiment; and, in fine, those which are capable of progressive motion, but whose actions are, like so many automatons, very few and always the same, have but a small portion of fentiment, and that limited to a few objects. There are numerous automatons in the human species: education and the respective communication of ideas augment the quantity as well as the vivacity of our fentiments. this respect how great is the difference between the

the civilized man and the favage? In the like manner is it with animals; those that live in a domestic state, by their intercourse with man, have their feelings improved; while those who remain wild possess only the sensibility they inherit from Nature, which is often more certain, but always less in quantity, than that which is acquired.

Befides, if we confider fentiment as a natural faculty, independent of the movements which it necessarily produces, we may still be able to estimate and determine its different degrees by physical relations, to which sufficient attention does not feem to have been hitherto paid. Before the highest degree of sentiment can exist in an animated body, it is necessary that this body should form a whole, not only sensible in all its parts, but so composed that all these parts should have an intimate correspondence with each other, infomuch that one cannot be agitated without communicating a portion of that agitation to all the rest. It is also necessary there should be one common centre in which the agitations may terminate, and on which the re-action of every movement may be performed. Thus man, and those animals which resemble him most in organization, will be the most fenfible beings. Those, on the contrary, who do VOL. VI. not

not form so complete a whole, whose parts have a less intimate correspondence, who have several centres of feeling, and under one cover feem less to comprise a perfect animal, than to contain several centres of existence separate from each other, will be beings far lefs fenfible. The pieces of a polypus, which has been cut, live separately; the head of a wasp, which is divided from the body, lives, moves, and even eats as before; a lizard, when cut in two, is neither deprived of motion nor feeling; the amputated limbs of a lobster are renewed; the heart of a turtle beats for a long time after it is taken out of the body; all those insects, in which the principal vifcera, as the heart and lungs, do not unite in the centre, extend throughout the body, and form, as it were, a feries of hearts, and other viscera; all fishes, whose organs of circulation have but little action; in short, all animals, whose organization is more or less remote from ours, have more or less sentiment.

In man, and in the animals which resemble him, the diaphragm appears to be the centre of sentiment; it is on this nervous part the impressions of pain and pleasure are directed; it is on that all the movements of the sensitive system are exercised. The diaphragm, in a tranverse

tranverse form, divides the body into two equal parts, of which the superior contains the heart and lungs, and the inferior the stomach and the intestines. This membrane is possessed of the utmost sensibility; it is also so necessary for the propagation and communication of feeling, that the flightest injury of it is always accompanied with convulsions, and often with death. The brain, which is considered as the feat of fensation, is not, therefore, the centre of sentiment, fince it may be wounded, and even parts of it removed without causing the death of the animal. Let us then distinguish sensation from fentiment. Sensation is nothing more than an agitation, or impression, on the fense, whereas sentiment is this very sensation rendered agreeable or disagreeable by the propagation of the agitation through the fensitive system, for the essence of sentiment, its sole characteristic is pleasure or pain, and all other movements, notwithstanding they pass within us, are totally indifferent, nor do they affect us. It is on fentiment that the whole exterior movements, and the exercise of animal force depend; it acts only in proportion as it feels, and the very part which we confider as the centre of fentiment is also the centre of force.

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A flight

A flight examination will shew us that all lively emotions, whether of pain or pleafure, in a word, all fensations, whether agreeable or disagreeable, are felt internally in the region of the diaphragm. On the contrary, there is no token of fentiment in the brain; in the head there are none but pure fensations; we only recollect that this or that fensation has been agreeable or disagreeable; and if this operation in the head is followed by a lively and real fentiment, then we feel the impression of it within the region of the diaphragm. Thus the fœtus, where this membrane is without exercise, is without sentiment, and the little motions of the fœtus may therefore rather be confidered as mechanical, than dependent either on fensation or on the will.

Whatever may be the substance which serves as the vehicle of sentiment, and produces muscular motion, it is certainly propagated by the nerves, and is communicated in an indivisible instant from one extremity to the other. In whatever manner this motion may be effected, (whether by vibrations, as in elastic fibres, or by a subtle fire, similar to that of electricity, which not only resides in animated, and in all other bodies, but is constantly regenerated in the

the former by the motion of the heart and lungs, by the action of the blood in the arteries, and also by that of exterior causes on the organs of sense) certain it is that the nerves and membranes are the only sensible part of the animal body. The blood, the lympha, the fat, the bones, the slesh, and all other solids and sluids, are of themselves insensible; the brain is a soft and unelastic substance, and on that account incapable of producing or propagating the vibrations of sentiment.

What may have given rife to the opinion that the brain was the feat of fensation, and the centre of fenfibility, is the circumstance that the nerves, which are the organs of fensation, terminate in the brain; for which reason it was confidered as the only part that could receive every agitation or impression. This supposition appeared fo fimple, and fo natural, that no attention was paid to the physical impossibility that attends it, though abundantly evident; for how is it possible that a soft and insenfible substance should not only receive impressions, but retain them for a length of time, and propagate all their agitations over the folid and fenfible parts? Perhaps it will be answered after Descartes and Peyronie, that it is not in the brain, but in the pineal gland that

this principle of fensation resides; but it is very casily distinguished that neither the pineal gland, nor cartical substance, have any connection with the nerves, but are furrounded with the insensible substance of the brain, and so separated from the nerves that they cannot receive the motions of them, and therefore these suppositions, like the former, must fall to the ground. But what, in this case, is the use and functions of this very noble and principal part of the body? Is not the brain to be found in every animal? Do we not find it larger in man, quadrupeds, and birds, which have all much fentiment, than in fishes, insects, and other animals which have but little thereof? When compressed, is not all motion suspended? Does not every action cease? If this part is not the principle of motion, why is it so essentially necessary to it? Why is it proportioned, in every species of animals, to the quantity of fentiment with which they are endowed?

However difficult these questions may appear, I think it is easy to answer them fatisfactorily. By an attentive and deliberate examination the brain, as well as the spinal marrow, (which is nothing more than a prolongation of it) is a kind of mucilage, hardly organized. We diffinguish in it only the extremities

extremities of the little arteries, which terminate there in great numbers, and carry no blood but a white and nutritive lympha; thefe small arteries, or lymphatic vessels, when difunited from the brain by maceration, appear in the form of very flender fibres. The nerves, on the contrary, never penetrate the substance of the brain, but only reach the furface of it, but previous to which they lofe their folidity and elasticity, and their extremities next the brain are foft, and almost mucilaginous. From whence it appears that the brain, which is nourished by the lymphatic arteries, furnishes in its turn nourishment to the nerves, which we ought to confider as a kind of vegetable fubstance, that shoots forth from the brain, and is divided into an infinity of branches. The brain is to the nerves what the foil is to plants; the extremities of the nerves are the roots, which, as in every vegetable, are more foft and tender than the trunk or branches; they contain a ductile matter proper for the growth and nourishment of the tree; and this ductile matter they derive from the substance of the brain, to which the arteries continually direct the lympha necessary for its supply. The brain, therefore, instead of being the seat of fensation, the principle of sentiment, is only an organ

organ of secretion and nutrition, but it is an organ which is highly effential, and without which the nerves could neither grow nor be preserved.

The brain is also larger in man, quadrupeds, and birds, because in them the quantity of nerves is greater than in fishes and insects, which on this very account have very little fentiment. And here I cannot help remarking, that man has not a proportionably larger brain than any other animal. There are species of apes, and of cetaceous animals, which, proportioned to the fize of their bodies, have more brains than man; another fact which proves that the brain is neither the feat of fenfation, nor the principle of fentiment, fince were it so those animals would have more senfations, and more fentiment, than man. By observing plants we shall perceive that they do not absorb the gross parts of earth or water, and that these must first be reduced by heat into tenuous vapours. In like manner the nerves are nourished by the subtle moisture of the brain, which is received by their extremities or roots, and thence carried into all the branches of the fensitive system. This fystem, as we have already remarked, forms an individual whole, of which the parts have fo close

close a connection that one cannot be wounded without injuring all the rest. The slightest irritation of the smallest nerve is sufficient to throw the whole body into a convulsion, nor is it possible to cure the pain, or remove the convulsion but by cutting away the nerve above the injured part, and then all the parts to which this nerve joined become at once motionless and insensible. The brain ought not to be confidered as an organic part of the nervous system, because it differs both in properties and substance, and is neither folid, elastic, nor sensible. I own that, when compressed, a stop is put to sensation; but this proves it a body foreign to the fystem, which, from acting with a weight on the nerves, benumbs them in the fame manner, as a heavy weight, applied to the arm or leg, deadens the feeling; and this is evident, because the moment the compression is removed sentiment revives, and motion is re-established. I also own, that, by injuring the brain, convulsions, and even death, will ensue, but these effects are produced from the nerves being injured in their very fource. To these reasons I might add particular facts, which would also prove that the brain is neither the centre of fentiment nor the feat of fensation. There have been VOL. VI. animals,

animals, and even children, born without either head or brain, yet endowed with sentiment, motion, and life. In insects and worms the brain is not perceptible, having only a part which corresponds with the spinal marrow, and therefore the spinal marrow might more reasonably be supposed the seat of sensation, being common to all animals, which the brain is not.

The obstacle to the advancement of human knowledge, lies not fo much in the things themselves as in our manner of considering them. However complicated the body of man may be his ideas are more so. It is less difficult to understand Nature as she is, than comprehend her as the is reprefented. She has only a veil, but we give her a mask, and conceal her with prejudices; and we suppose she acts and operates as we act and think; but her actions, however, are evident, and our thoughts are obscure; her designs and operations are always uniform and certain, which we feem to confound with the variable illusions of our own imaginations. I speak not merely of arbitrary fystems and imaginary hypotheses, but of the methods by which we generally study nature. Even experiment, although the most certain method, has been productive of more error than

than truth; as the smallest deviation leads to barren wilds or exhibits a glimple of obscure objects; to which affinities and properties are ascribed, and those steps being followed by the whole world, the confequences derived from them are admitted as fixed principles. Of this I might give a proof by exposing what are called principles in all the sciences, both abstract and real. In the former the general basis of principle is abstraction, or one or more suppofitions; in the latter, principles are nothing more than consequences, whether true or false, of the methods which we have adopted. To instance only Anatomy; must not the first man who furmounted the natural repugnance, and ventured to open a human body, suppose that by diffecting and examining all its parts, he should obtain a knowledge of its structure, mechanism and functions? but finding the subject more complicated than he had imagined, he was obliged to renounce those pretentions, and to adopt a method, not by which he might know and judge, but by which he might view the parts in a certain order. This method however was not to be acquired by one man but has occupied the attention of ages, and even of our ablest anatomists to the present day, and even when acquired it is not science, but the

road which leads to it; and which might have done fo, if instead of keeping within the narrow and beaten track, anatomists had extended the path, by comparing the human body with that of other animals; for does not the foundation of all science consist in a comparison of similar and different objects, of their analogous and opposite properties, and of all their relative qualities? And hence it is, that although human bodies have been diffected for three thoufand years, anatomy still remains nothing more than a nomenclature, and hardly any advances have been made towards the real object, the knowledge of the animal economy; in which certainly Nature appears very mysterious, not only because the subject is complicated, but because having neglected those modes of comparison which alone could have afforded us any light, we have been immerfed in the obfcurity of doubt, or bewildered in the labyrinth of vague hypotheses. We have millions of volumes descriptive of the human body, while the structure of animals has been almost entirely neglected. The most minute parts of man have been named and described, and yet we know not whether those parts are to be found in other animals. Certain functions have been ascribed to certain organs, without know-

ing whether those functions cannot be exercifed by other beings though deprived of those organs; infomuch that in all the explications relative to the animal economy, we labour under the double disadvantage of first engaging in a complicated fubject, and then reasoning on it without the affistance of analogy. Through the whole course of this work we have followed a different method; constantly comparing Nature with herself, we have considered her relatively and in her most distant extremes; and it will be easily perceived that, after all our labour to remove false ideas, destroy prejudices, and to separate realities from arbitary opinions, the only art we have employed is comparison. If we have been enabled to throw any light upon those subjects, less is to be attributed to genius than method, and which we have endeavoured to render as general as our knowledge would permit.

Having hitherto avoided giving general ideas, until we had prefented the refults of particular operations, we shall now content ourselves with collecting certain facts which will suffice to prove that man, in a state of nature, was not calculated to live upon herbage, grain, or fruits; but that at all times, with the greatest part of other animals, he sought to feed on shells.

flesh. The Pythagorean diet, so highly extolled by some ancient and modern philosophers and even recommended by certain physicians, was certainly not prescribed by Nature. In the golden age, man, as innocent as the dove, fought for no nourishment but acorns of the forest, and pure water of the stream. Surrounded with subfishence, he was free from inquietude, lived inderendent, and at peace with himself and other animals; but losing fight of his dignity, he facrificed his liberty to the union of fociety, and exchanged a life of repose for tumultuous warfare. Of his nature thus deprayed, the first fruits were an appetite for flesh and blood; and this depravity the invention of arts and manners served to complete. Thus have favage and auftere philosophers, in all ages, repreached the civilized part of mankind. Flattering their own pride, at the expence of their species, they have presented a picture which has no value but from the contraft it exhibits. Did this state of ideal innocence, of perfect temperance, of entire abstinence from flesh, of profound peace and tranquillity ever exist? Is it not a fable in which man, like an animal, has been employed to convey moral lessons? Can virtue have subsisted before society? Can the loss of our favage nature

ture merit regret? or can man, in a wild state, be considered as a more worthy being than the civilized citizen? Yes, for all mifery arifes from fociety; and what fignifies what virtue he possessed in that state, if he was more happy than he is now. Are not liberty, health, and strength, preferable to effeminacy, fensuality and voluptuousness, accompanied with flavery? The absence of pain is at least equal to the enjoyment of pleasure, and to be completely so, is to have nothing to defire. If these observations were just, why do they not tell us it is better to vegetate than to live, to have no appetites than to gratify them, to fleep through life, in a perfect apathy, than to open our eyes to fee and feel; that, in fhort, it is better to be fo many inanimate maffes attached to the earth. than be capable of enjoying those benefits Nature fo bountifully bestows?

But, instead of discussing, let us advert to facts: Is the savage inhabitant of the desert a tranquil animal? Is he a happy man? For we cannot suppose, with a certain philosopher, (Rousseau) that there is a greater distance between a savage and a man in a pure state of nature, than between a savage and ourselves; that the ages before man acquired the use of speech were more than those in which languages

languages were brought to perfection. In reasoning upon facts all suppositions ought to be thrown aside, until every thing presented by Nature is examined. In doing this we shall descend from the most enlightened to a people which are less so; from those to others yet more rude, but still subject to kings and laws; from these to favages, among whom there are as many shades as in the civilized nations; fome of them we shall find forming nations subject to chiefs; others, in smaller bodies, governed by certain customs; and others, the most solitary and independent, united in families, and submitting to their fathers. Thus an empire and a monarchy, a family and a father, are the two extremes of fociety; and these extremes are likewise the limits of Nature; for if they extended further in traversing the different folitudes of the earth we must have found these human creatures void of fpeech, the males separated from the semales, the children abandoned, &c. In contradiction to this I, however, affert, that it is impossible to maintain that man ever existed without forming families, because the children must inevitably have perished had they not been attended for feveral years. This physical neceffity alone is a fufficient demonstration that the

the human species could neither multiply nor exist without society, and that the attachment of parents to their children is natural: this attachment was also sufficient to habituate them to certain figns and founds, and to accustom them to the expressions of sentiment and defire; of this we are convinced by the facts that the most solitary savages have the use of figns and speech. Thus we know the pure state of nature is that of a savage living in a defert with his family, knowing his children, and being known by them, using words, and making himself understood. Neither do the favage girl, found in the woods of Champagne, nor the wild man, in the forests of Hanover, prove any thing to the contrary. They had lived in absolute solitude, and therefore could have no idea of fociety, or of words; but had they met Nature would have prompted an attachment, which attachment would foon have taught them to make themselves understood; they would first have learned the language of love, and then that of tenderness for their offspring. Besides these must have sprung from parents living in fociety, and left by them at the age of four or five years, at least when they had fufficient strength to procure subfistence, though too feeble to retain the ideas which VOL. VI.

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which might have been communicated to them.

Let us, then, examine this man in a pure state of nature, that is, this savage living as the head of a family; if the family prospers he foon becomes chief of a numerous body, obferving the same customs, and speaking the fame language; at the third or fourth generation they will become a small nation, which, increasing, by time, will either be formed into a civilized people or remain in a favage state, as circumstances may concur. If they reside in a mild climate, and a fertile foil, where they meet with nothing but deferts, or people like themselves, they will remain in their pristine state, and, according to circumstances, become friends or enemies to their neighbours. But if under a fevere climate, and pinched for want of fustenance, or room, they will make irruptions, form colonies, and blend themselves with other nations, of which they will either become the conquerors or flaves. Thus man, in every fituation, and in every region, still aims at fociety; it is, indeed, an uniform effect of a necessary cause, since without it the propagation, and, of course, the existence, of mankind would cease. It may to so to make built works

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Thus we plainly see society is founded in Nature: and upon examining, in the fame manner, the appetites of favages we shall find that none of them live folely on fruits, herbs, or grain; that they all prefer flesh and fish to other food, and that instead of preferring pure water they endeavour to make for themselves, or procure from others, a beverage less insipid. The favages of the fouth drink the juice of the palm-tree; those of the north take large draughts of whale oil; others produce fermented liquors, and they all possess a passionate fondness for strong liquors. Their industry, dictated by necessity, and excited by natural appetite, amounts to nothing more than forming a few instruments for hunting and fishing. A bow and arrows, a net and canoe, are the fole produce of their arts, and are all for the purpose of procuring food fuitable to their palates. And what is suitable to their palate must correspond with Nature; for, as we have already remarked, in the history of the ox, man, having but one stomach, is not formed to live on herbage alone; nor would he be much better fupplied from grain, notwithstanding it has been highly improved by art, and contains more nutritive particles than when poffeffed only of their relative qualities; yet if man re-

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ceived no other food he would with difficulty drag on a feeble and languishing existence.

If we view those enthusiastic solitaries, who abstain from every thing that has had life, who, from religious motives, renounce the gifts of the Creator, shun society, and shut themselves up in those consecrated walls, at the very idea of which Nature recoils. Confined in these tombs fet apart for the living, they draw on, for a very few years, a feeble and useless existence, and when the hour of diffolution comes it may be faid to be that in which they ceased to die. If man were reduced to abstain from flesh, at least in these climates, he could neither subsist nor multiply. Perhaps this diet might be possible in fouthern countries, where the fruits arrive at greater maturity, where the plants are more substantial, and the roots more succulent. The Brahmans, nevertheless, form rather a fect than a people, and their religion, though very ancient, has never extended beyond one climate. This religion, founded upon metaphysics, is a striking example of the fate of human opinions. From the scattered remains we may plainly perceive that the sciences have been cultivated from great antiquity, and carried perhaps to a greater degree of perfection than they are at this day. It was well known in ancient

ancient times that all animated beings contained living and unperishable particles, which passed from one body to another. This truth, which was adopted by a few philosophers, and afterwards generally received, could only retain its purity during the enlightened ages, and a revolution of darkness succeeding, nothing more of them was remembered but just enough to countenance the opinion, that the living principle of the animal was an unperishable whole, which separated from the body after death. To this visionary whole they gave the name of foul, which was foon supposed to exist in all animals; and they afterwards maintained, that after death, what they thus termed foul, perpetually transmigrated from one body to another. Man was not excepted from the tenets of this doctrine; and blending morals with metaphysics, they afferted that this surviving being retained in its transmigrations all its former fentiments, affections, and defires. Credulity trembled, and they comtemplated with horror the idea that on quitting its present agreeable abode the foul would become the inhabitant of a noisome animal. Fear being the forerunner of superstition they began to entertain fresh alarms, and dreaded, left in killing an animal, they should destroy the

the mistress they had loved, or the parent which had given them being; every beast they began to regard as a relation or neighbour, till at last, from motives of love and duty, they were obliged to abstain from every thing that had life. Such is the origin and progress of the most ancient religion in India.

But to return to our subject. An entire abstinence from slesh can only serve to enfeeble Nature. Man, to enjoy health, ought not only to use this solid nourishment but even to vary it; to acquire complete vigour he must chuse that which is most agreeable to him, and, as he cannot continue in an active state without procuring new fenfations, so he must indulge himself with a variety of eatables to prevent the difgust that would follow an uniformity of nourishment, being careful, however, to avoid excess, which is still more injurious than abstinence. Animals which have but one stomach, and whose intestines are short, are forced, like man, to feed on flesh, and, therefore, by an examination of the various animals, it will appear, that their difference in food arises from their conformation, and that their nourishment is more or less folid as their stomachs are more or less capacious. But it must not from this be concluded, that animals, which

which feed on herbs are under a physical neceffity of feeding on them alone, although carnivorous animals cannot exist without flesh: we only mean it to be understood, that those which have feveral stomachs can be supported without fuch folid food; not but they might make use of it if Nature had furnished them with talents to feize on prey, fince we find sheep, calves, goats, and horses, greadily eat milk and eggs, and do not refuse even meat which has been seasoned with falt; it may, then, be faid, that a tafte for flesh is a predominant appetite in all animals, and that it is more or less vehement, or moderate, according to their particular conformation, fince we find it not only in man and quadrupeds, but in fishes, insects, and worms; for the latter of which, indeed, all flesh seems to be ultimately destined. At the hours problem was O comes to the

In animals nutrition is performed by organic particles, which, separated from the gross mass of food by digestion, mingle with the blood, and assimilate with all parts of the body. But, independent of this principal effect arising from the quality, there is another which depends on the quantity of the food. The stomach and intestines are supple membranes, which occupy a considerable space in the body, and which

to preserve their tense state, and to counterbalance the force of the adjoining parts, require to be always in some measure filled. If for the want of nourishment this space happens to be entirely empty, then the membranes, having no longer an inward support, bear down upon and adhere to each other, and these give rife to all the oppressions and weakness of extreme want. Food, therefore, as well as contributing to the nourishment of the body, ferves as a kind of ballast to it. Its presence and quantity are equally necessary to preserve an equilibrium; and when a man dies for hunger it is not more for want of nourishment than from not having a proper poile to the body. Thus animals, especially the most voracious, are so eager to fill up the vacancy within them that they will swallow even earth and stones. Clay has been found in the stomach of a wolf, hogs eat it very greedily, and most birds fwallow pebbles, &c. Nor is this from tafte but necessity, for the most craving want is not to refresh the blood by a new chyle, but to maintain an equilibrium of the forces in the grand parts of the animal machine.

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THE Wolf is one of those animals whose appetite for animal food is very strong. Nature has furnished him with various means for fatisfying this appetite, and yet though she has bestowed on him strength, cunning, agility, and all the necessary requisites for discovering, pursuing, seizing, and devouring his prey, he not unfrequently dies with hunger; for man having become his declared enemy, and put a price upon his head, he is obliged to take refuge in the forests, where the few wild animals he can meet with escape him by the swiftness of their course, and whom he cannot surprise in fufficient quantities to fatisfy his rapacity. He is naturally dull and cowardly, but becomes ingenious from want, and courageous from necessity. When pressed with hunger he braves danger; he attacks those animals which are under the protection of man, par-VOL. VI. ticularly

ticularly fuch as he can eafily carry away, as lambs, kids, and even small dogs; if he succeeds in these excursions, he often returns to the charge, till being wounded and closely putfued by dogs and men, he conceals himself during the day in his den, and only ventures out at night, when he traverses the country, fearches round the cottages, kills fuch animals as have been left without, scratches up the earth from under the barn-doors, enters with a barbarous ferocity, and destroys every living thing within, before he begins to fix upon, and carry off his prey. Should these fallies not succeed, he returns to the forests and pursues with avidity any animal he can meet, nay he will even follow the tract of large animals in hopes they may be feized and destroyed by some other, and that he may become a partaker of the spoil. When his necessities are very urgent he will face destruction; he attacks women and children, and will fometimes dart upon men; in a word he becomes furious by his continual agitations and ends his life in madness.

The wolf, both externally and internally, fo nearly resembles the dog, that he seems modelled upon the same plan; and yet if his form is similar, his nature is totally different, and so unlike are they in disposition, that no two ani-

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mals can have a more perfect antipathy to each other. A young dog shudders at the fight of a wolf, and even the scent of one, though new and unknown, is fo repugnant to his nature that he will come trembling to his mafter for protection. A powerful dog, who knows his own ftrength, testifies his animosity, attacks him with courage, endeavours to put him to flight, and uses every exertion to get rid of an object whose presence is hateful. They never meet without its terminating in flight or death: If the wolf proves strongest he tears and devours his prey; but the dog is more generous and contents himself with victory; he does not even approve the smell of the body of a dead enemy, but leaves him as food for the ravens, or even other wolves; for they eat the carcaffes of each other; and if one wolf happens to be much wounded, a number of them will track him by his blood and speedily dispatch him.

The dog, even in his wild state, is not cruel, he is easily tamed, and continues firmly attached to his master. The young wolf may be tamed, but never has any attachment. Nature in him is stronger than education; he resumes, with age, his ferocious disposition, and returns as soon as he can to his savage state. Dogs, even of the dullest kind, seek other animals and are

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naturally disposed to accompany them; and by instinct alone, without any education, they take to the care of flocks and herds. The wolf, on the contrary, is the enemy of all fociety: he does not affociate even with those of his own species; when several are seen together it is not to be confidered as a peaceful fociety, but a combination for war; their fierceness and loud howlings denote they intend an attack upon some large animal, as a stag, ox, or formidable dog. The inftant their military expedition is over, they separate, and each returns in silence to his folitary retreat. There is not any strong attachment between the males and females; they feek each other but once a year, and then remain but a few days together. They always couple in winter; feveral males will follow one female, and this affociation is more bloody than the former, for they growl, fight, and tear one another, and the majority will frequently kill him that has been preferred by the female. It is usual for the she wolf to fly her admirers a long time, and at last retire with the one she has chosen when the rest are all asleep. The female does not continue in feason above twelve or fifteen days, the oldest are generally so first. The males have no fixed time, but pass from one female to another from the end of December

to the end of February. The time of going with young is about three months and an half, and young whelps are found from the end of April till the beginning of July. This difference in the time of gestation between the shewolf, who goes above an 100 days, and the bitch that does not exceed 63, proves that the wolf and dog differ not more in their dispositions than in their temperament, particulary in one of the chief functions of the animal economy; besides the wolf lives longer than the dog. and the she-wolf breeds but once while the bitch has two or three litters in the year; for thefe, together with the reasons we have adduced in the History of the dog, the wolf and the dog cannot be confidered as the fame animal; but by the nomenclators of Natural History, who have only a superficial knowledge of Nature. The wolf also differs from the dog in several external characteristics. The aspect of the head and form of the bones are not the fame. the cavity of the eye is obliquely placed in the wolf, the orbits are inclined, his eyes sparkle in the night, he howls instead of barking, his step is more precipitate, yet more uniform, his body is stronger but less supple, his limbs more firm, his jaws and teeth larger, and his hair much coarfer.

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When the females are near the time of bringing forth, they feek for an agreeable place in the inmost recesses of the forest; in the middle of the chosen spot, they level a small space, cutting away the thorns and briars with their teeth; they then carry thither a quantity of moss, which they form into a bed for their young; they generally bring forth five or fix, though fometimes eight or nine. The cubs, like puppies, come into the world with their eyes closed; the mother suckles them for some weeks, and foon learns them to eat flesh, by chewing it first herself; some time after she brings them field mice, leverets, partridges, and birds yet alive; the young wolves begin by playing with, and end by killing them, when the dam strips them of their feathers, tears them in pieces, and gives to each of her young a share. They do not leave this den until they are fix weeks or two months old; they then follow the mother, who leads them to drink in the trunk of some old tree, or to a neighbouring pool. If the apprehends any danger, the hastily conducts them back, or conceals them in some convenient place. Though at other times more timorous than the male, yet when her young are attacked she becomes fearless, and defends them with fury. She never forfakes them

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them until they have shed their first teeth, and completed their new; when, having acquired talents for rapine, and learned industry and courage from her example, she leaves them to shift for themselves, being herself about to be engaged in the care of a new progeny.

Both males and females are capable of generating when two years old. It is probable that the female may be more forward than the male: it is, however, certain, that they are not inclined to copulate before the fecond winter, which necessarily implies eighteen or twenty months; a she-wolf, which I reared, discovered no fymptoms until the third winter, when the was more than two years and a half old. Huntsmen affert that in every litter there are more males than females, which feems to confirm the general remark, that Nature, in all species, produce more of the former than the latter. From them also we learn that some of the males attach themselves to the females, and accompany them until they are about to bring forth, when she steals from him, lest he should devour them immediately after birth; but that when brought forth, he takes the same care of them as the female, carries them provisions, and if the mother happens to be killed, he carefully brings them up. I cannot, however, pretend to vouch for the truth of these facts, which appear to me contrary to their natural dispofitions.

These animals require two or three years to complete their growth, and live to the age of 15 or 20; another proof of our polition that the growth takes up one seventh part of life. As the wolf grows old he turns grey, and his teeth appear much worn. He sleeps when full or fatigued, but more by day than night, and is always very eafily awakened. He drinks frequently, and in times of drought, when there is no water in holes or trunks of trees, he will come to the brooks or rivulets feveral times in the day. Although very voracious he will go four or five days without meat, provided he is well supplied with water. He has great frength, particularly in his fore parts, in the muscles of his neck and jaws. He will carry off a sheep in his mouth, and at the same time outrun the shepherds, so that nothing but dogs can overtake or oblige him to quit his prey. He bites cruelly, and always with greater vehemence in proportion as he is less resisted, for with fuch as can defend themselves he is cautious and circumspect. He is cowardly, and never fights but from necessity. When wounded by a bullet he will cry out, and yet Date: when

when furrounded and attacked by clubs he never complains, but defends himself in silence, and dies as hard as he lived. He is more favage, has less sensibility, and more strength than the dog. He travels and roams about for nights and days together, and perhaps of all animals is the most difficult to be hunted down. The dog is gentle and courageous; the wolf though favage is fearful. If entrapped in a pit-fall he is for some time so frightened and overcome that he may be killed, or taken alive, without offering to refift; he will fuffer himfelf to be chained, muzzled, and led along without giving the least figns of anger or refentment. His fense of smelling is very acute, and the odour of a carcass will strike him though at more than a league diftant; he also fcents living animals a great way off, and will hunt them a long time by following their track. On leaving the wood he always goes against the wind, and upon coming to the extremity he stops, smells on all sides, and receives the emanations that may come either from his enemies or prey, and which he nicely distinguishes. He prefers those animals he kills himself, but will eat the most infected carcasses. He is fond of human slesh, and perhaps was he fufficiently powerful he would VOL VI. X

eat no other. Wolves have been known to follow armies, to go in numbers into the field after the battle, and devour such bodies as lay upon the surface, or were negligently interred: when once accustomed to human sless they will attack men, preferring the shepherd to his slock, devour women, and carry off children.

It fometimes happens that whole countries are obliged to arm for the purpose of destroying them. Hunting of them is also a favorite diversion among the great, and is certainly a very useful one. Wolves are distinguished by huntimen into young, old, and very old; they are known by the prints of their feet, which are large in proportion to their age; those of the females are longer and more flender. It is necessary to have a good bloodhound to put up the wolf, and when upon the fcent every art must be used to encourage him, as all dogs have a natural antipathy to this animal, and are very cold in the pursuit. When the wolf is put up greyhounds should be let after him in pairs, the first pair almost immediately supported by a man on horseback; the second when he is at the distance of eight or nine hundred paces, and a third pair when the other dogs have come up with and begin to bait him; he keeps them off for a confiderable time, but the

the hunters coming up generally dispatch him with their cutlaffes; when killed the dogs never shew the smallest appetite to enjoy the fruits of their victory. The wolf is sometimes. hunted by harriers, but as he runs straight forward, and will hold his speed for a day together, the chace is very tedious without greyhounds to harrass and turn him at every view. Several arts have been adopted to destroy these noxious animals, such as worrying them with large mastiffs, laying snares, digging pits, and spreading poisoned meats, yet their numbers remain nearly the fame, especially in woody countries. The Britons are faid to have extirpated them from their island, and yet I am affured they are still found in Scotland; as there are but few forests in South Britain their destruction there was less difficult.

Their colour differs with the climate in which they live, and sometimes in the same country. Beside the common wolves, in France and Germany, there are others with thicker and yellow-coloured hair; these, though more savage, are less destructive than the others, as they neither approach slocks nor the habitations of men, but live solely by the chace. In the northern climates some are sound quite black,

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and others entirely white. The common species are very generally diffused, being found in Afia, Africa, and America, as well as in Europe, 'The wolves of Senegal resemble those of France, except being larger and more fierce; those of Egypt are smaller than those of Greece. In the east, particularly in Persia, the wolf is trained up for a shew, being taught to dance, and exhibit a number of tricks; and, according to Chardin, when well taught, a fingle wolf will fell for 500 crowns. This fact proves, that, by dint of time and restraint, these animals are susceptible of education. Several which I reared were very docile, and even courteous, during the first year, nor eyer attempted to seize the poultry, or other animals, when properly fed, but when they arrived to 18 months I found it necessary to chain them, to prevent their doing of mischief, or running away. One I had I allowed to range at large among some sowls, and he never touched any of them till he was about 18 or 19 months old, when, as a specimen of what he could do, he killed the whole one night, without eating any of them. I had another which broke his chain and ran off, but not till he had killed a dog with whom he had been

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very familiar, and a particular instance of the ferocity of a she-wolf I have given under the article dog.

There is nothing valuable in this animal but his skin, which makes a warm durable covering. His sless is so bad that it is abhorred by all animals, and no species will eat it, his own excepted. His breath exhales a most fetid odour. As to satisfy his voracious appetite he devours, without distinction, putrid sless, hair, bones, skin half tanned, or even any thing that comes in his way, he vomits frequently, and empties himself more often than he fills. In a word, he is every way offensive; he has a savage aspect, a frightful howl, an insupportable stench, a perverse disposition, and sierce habit; he is hateful while living and useless when dead.

## SUPPLEMENT.

WE have it from Pontoppidan, that wolves did not exist in Norway before the year 1718, and that in the last war between Sweden and Norway they followed the provisions of the army.

The

The Viscomte Querhoënt has informed me that there are two species of wolves at the Cape of Good Hope, the one black and the other grey with black spots; that they are bigger than those of Europe, and have very large teeth, but their cowardice makes them little apprehended, though sometimes, as well as the ounces, they will steal into the city in the night.

## THE FOX.

THIS animal is famous for his craft, and he partly merits the reputation he has acquired. What the wolf (fig. 62.) executes by superior strength, the fox (fig. 63.) accomplishes by cunning. Without attacking the shepherd, his dog, or even his flock, he finds a more certain way to subsist. Patient and prudent he waits the opportunity for depredation, varying his conduct according to circumstances, always reserving some arts for unforeseen events. Self-preservation is his grand object, and though as indefatigable, and more nimble

Engravd for Barr's Buffon.

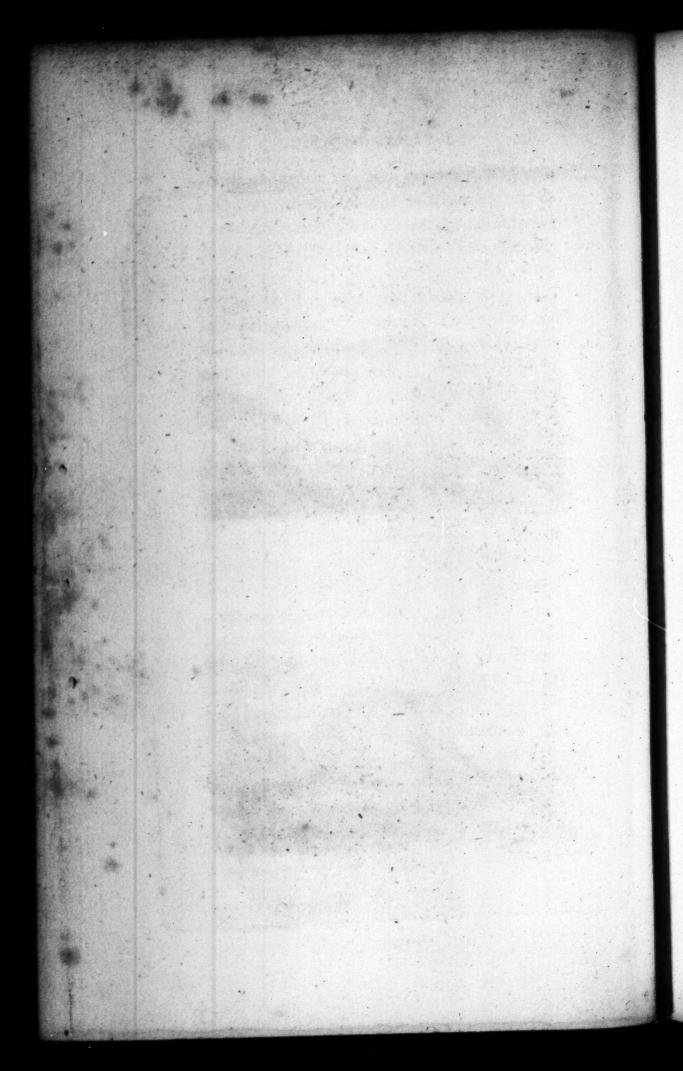


TIG.62.

Wolf.



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nimble than the wolf, he never trusts entirely to the swiftness of his course, but contrives himself an asylum, where he retires in cases of necessity, and in which he dwells and brings up his young.

As among men, those who lead a domestic life are more civilized than perpetual wanderers; fo, among animals, the taking pollettion of an home, supposes a superior degree of instinct. The choice of fituation, the art of rendering it a convenient habitation, and concealing the entrance to it, likewife indicate superior skill and industry. Endowed with both these, the fox turns them to his advantage. He fixes his refidence at the edge of a wood, yet not far from some cottage or hamlet; he listens to the crowing of the cock, and the cackling of other poultry; he scents them at a distance; he judiciously chooses his time; creeps slily along; fuddenly makes the attack, and rarely returns without his booty. If he can get into the hen-rooft, he puts all to death, and retires with part of his prey, which he conceals at fome distance; he then returns for more, which he takes away and hides in the fame manner, though in a different place; and this practice he continues, 'till, warned by the approach of day, or the movements of the family, he retires to his den.

den. He makes use of fimilar arts with the fowler; visits the nets and springes very early in the morning, expertly takes the birds out of the fnare, carries them off fuccessively, and conceals them in different places; where he fometimes leaves them for two or three days, but is never at a loss to recover his hidden treafure when he is in need. The young hare and rabbit he hunts down; the old ones he feizes in their feats, and never misses those which are wounded; he discovers the nests of partridges and quails, seizes, the old ones while they are fitting, and destroys a prodigious quantity of game; so that if he is less injurious than the wolf to the peasant, he is more noxious to the gentleman. The chace of the fox requires less preparation, and is more amusing than that of the wolf. Though all dogs have a great reluctance to the latter, they purfue the fox with pleasure, and often in preference to the ftag or hare. He is usually hunted with hounds, affifted by terriers. The inftant he finds himself pursued he makes to his den, and takes refuge at the bottom, into which the terriers will follow and keep him at bay, while the hunters remove the earth from above. But as his kennel is often under rocks, or among the roots of trees, he cannot then be dug outs

nor is the terrier able to contend with him at the bottom of his hole. In this case he remains secure; but if he can be dug out, the usual way is to carry him in a bag to some distance, and there set him loose before the hounds. His shifts to escape, when all retreats to his kennel are cut off, are various and surprising. He will then proceed in a direct line before the hounds, but making to the most woody grounds, he takes to those paths most entangled with thorns and briars, and seldom fails to extremely harrass and satigue the dogs.

The most effectual method of destroying foxes, is to lay traps for them, baited with flesh, live pigeons, or fowls. I once suspended on a tree, at the height of nine feet, some meat, bread, and bones, at which the foxes had been fo eager in leaping, that in the morning around it was beaten as fmooth as a barn floor. The fox is extremely voracious; for besides stesh, he eats with equal avidity, eggs, milk, cheefe, fruit, and particularly grapes. When he cannot procure a sufficiency of leverets and partridges, he falls upon rats, mice, ferpents, toads, and lizards, which he destroys in great numbers, and thereby renders one service to mankind. Infects, shell-fish, and even the hedgehog, at times, become his prey. He attacks VOL. VI. bees

bees and wasps for the sake of their honey; they at first seem to force him to retire, but this is only to roll upon the earth and crush those which have stuck to his skin; he then returns to the charge, and by perseverance, obliges them to abandon their combs, when he devours both wax and honey.

The fox greatly resembles the dog in the internal parts. His head however is larger in proportion to his body, his ears are shorter, his tail more bushy, and his eyes more oblique. He also differs from the dog by a strong offenfive smell, which is peculiar to his species, and also in disposition; for he is not easily tamed, can never be rendered truly domestic, pines and dies of chagrine when long denied his liberty. As we have already stated, he resuses to copulate with the female dog. The foxes bring forth once a year, they generally have four or five, feldom fix, and never less than three. When the female is pregnant, she seldom goes out of her kennel, where she prepares a bed for her young. She is in feafon in winter, and there are young foxes in April. When she finds her retreat is discovered, and that her cubs have been disturbed, she endeavours to find a place of greater fecurity and carries them to it one after the other. They come blind into the . world.

world, and like dogs also they grow from eighteen months to two years, and live to the age of thirteen or fourteen.

The fenses of the fox are as good as those of the wolf; his fmelling is more acute, and the organs of his voice are more supple and more perfect. The wolf only howls, while the fox yelps, barks, and has a mournful cry like that of the peacock. He varies his tones also according as he is affected. He has tones expreffive of defire, forrow and pain; the latter of which he never uses but when shot or deprived of some member, for he complains of no other wound, and like the wolf, when attacked with cudgels only he never complains, but defends himself with bravery and courage, though in obstinate silence until the last gasp. He bites dangerously and with such determined fury that it is difficult to make him quit his hold. His yelping is a kind of quick barking, which he generally terminates by raifing his voice and refembling the cry of a peacock. In winter, especially during frost he yelps continually, but in the fummer he is almost entirely mute, and at this season he sheds his hair. The skin of young foxes, or those taken in summer, are held in little esteem. The slesh of the fox is not so bad as that of the wolf; dogs, and even

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men,

men, eat it in autumn, especially if he has been fattened with grapes; and in winter good furs are made of his skin. He sleeps so found that he may be closely approached without being awakened; he fleeps in a round position like a dog, but when he only means to rest he Aretches out his hind legs and lies flat on his belly. In this posture he watches for birds as they perch on the hedges, who no fooner perceive him, than they fet up shrill cries to warn their neighbours against their mortal enemy: the jays and magpies in particular will follow him for some hundred paces, constantly repeating their cries as a warning. The fox has a very disagreeable odour which makes it necesfary to keep them in stables at a distance from the house, and this perhaps might be the reason why those I reared were less tame than the wolf, with whom this precaution was unnecessary. At the age of five or fix months the foxes began to chace the ducks and fowls, upon which account I was obliged to chain them, and although I kept these very foxes for more than two years, they never attempted to touch a fowl while they were fo confined; a live hen was frequently fixed near them for a whole night, and though they had previously been kept short of food they never forgot they were chained, and

and the hen was invariably left by them un-

The fox is fo subject to the influence of climate, that the species are almost as numerous as of any domestic animal. The generality of French foxes are red, some few are grey, but all have the tip of their tails white; the latter are fometimes called coal-foxes from having very black feet. In the northern countries there are foxes of all colours: black, blue, dark and light grey, white, white with reddish legs, white with black heads, white with the end of the tails black, red with the throat and belly white, and laftly, with a stripe of black along the back and another croffing it at the shoulders, of these the throats are also black and they are larger than the others. The common kind are the most generally diffused; they are not only in Europe, but throughout Asia and in America; but in Africa and the countries near the equator they are very rare. Those who state having seen them at Calicut and other fouthern provinces, must have taken the jackall for the fox. Aristotle falls into a similiar error when he fays the foxes of Egypt were smaller than those of Greece; those little Egyptian foxes being only polecats whose stench is intolerable. They are evidently the natives of by extreme cold and their living in the countries adjacent to both poles. The hair of the white fox is not much esteemed because the hairs fall easily off; the silver-grey is better and the blue and striped are prized on account of their variety, but the black is the most valuable and yields to none but the sable. There are soxes in Spitzbergen, Greenland, Lapland, and in Canada; in the latter place there are some of the striped species, the common kind are not so red as those in France, but their hair is longer and more plentiful,

### SUPPLEMENT.

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SOME travellers affert that the heads and feet of the Greenland foxes resemble those of dogs and that they bark like them; that they are of various colours such as white, grey and blue, and that they live upon eggs, birds, slies, bees, and whatever they can procure from the holes of the rocks in the sea. At Kamtschatka there are some of a dark chesnut, others red with black

black bellies, and others of a dark grey, all of which have thick coats of hair very gloffy and beautiful.

In Norway there are white, red, and black foxes, and also some with black lines along the back. Pontoppidan, who delights in the marvellous, relates several wonderful tales of these animals, and adds that they frequently catch lobsters with their tails.

#### THE BADGER.

THE Badger is an indolent, diffident, folitary animal, who retires to the most secret places, and there digs for himself a subterraneous residence. He not only shuns society but even the light, spending three-sourths of life in his obscure retreat, and never venturing out but in search of sood. He burrows the ground with great facility, as his body is oblong, his legs short, and his claws, those especially of his fore seet, are very long and compact; his habitation

tation is often at a confiderable distance from the furface, and the passage to it always oblique and winding. The fox, who is less expert at digging, often benefits from the labours of the badger: unable to force him to quit his retreat he often drives him from it by fratagem. He stands sentinel, and defiles it with his ordour, which proves an infallible expedient. The badger gone, he takes possession, enlarges, and accomodates it for his own purpose. Though forced to remove, the badger leaves not the country, but digs himself a new habitation at a little distance, from which he never goes out but at night, even then not far, and returns upon the smallest appearance of danger. In this precaution alone confifts his fafety, for his legs being very fhort the dogs foon overtake him. Upon being attacked he throws himself backwards, and as his legs, claws, jaws, and teeth, are very strong, he is enabled to fight with obstinacy, and it is seldom that he dies unrevenged.

Formerly, when badgers were more common, terriers were trained up to hunt and take them in their burrows; but this was no eafy talk, as his mode of defence is to retire, and doing so to undermine great quantities of earth, either to stop up the passage or bury the

dogs

dogs under it. The only certain way of taking him is to open the hole above, after the dogs have driven him to the extremity. He is generally taken hold of with pincers, and then muzzled to prevent his biteing. I have had feveral brought me taken in this manner, some of which I kept a long time. The young ones are eafily tamed; they will play with dogs, and follow the person from whom they receive their food; but the old ones always retain their favage dispositions. They are neither mischievous nor voracious, yet they are carnivorous; they prefer raw meat, but will eat flesh, eggs, cheese, butter, bread, fish, fruit, nuts, grain, roots, &c. They fleep the greatest part of their time, yet they are not subject to a lethargic torpor during the winter, like the dormouse, or mountain rat; this makes them very fat, although they eat moderately, and they can go feveral days without food.

They keep their holes extremely clean, nor ever defile them with their ordour. The male is feldom found with the female; when the latter is about to bring forth she collects a quantity of herbage, which having bundled up she trails along, between her feet, to the bottom of her hole, where she converts it into a commodious bed for herself and young ones: she vol vi.

brings forth in the fummer, and generally has three or four at a time; the nourithes them at first with her milk, but very soon inures them to fuch food as she can provide. For them · fhe feizes young rabbits, field-mice, lizards, grashoppers, takes birds eggs from their nests, and uncovers bee-hives, where they are buried, and carries away the honey; all which she carries to her brood, whom she often brings to the mouth of the hole, in order to feed or fuckle them. These animals are naturally chilly; and those reared in the house will scarcely ever quit the fide of the fire, which they will approach so close as frequently to burn themselves. They are very subject to the mange, and will infect those dogs which penetrate their burrows, unless they are carefully washed. The hair of the badger is always filthy; between the auns and tail there is an opening about an inch deep, whence an oily ill-scented liquid is constantly emitted, and which the animal is fond of fucking. Its flesh has not a very bad taste; and of its skin are made coarse furs, collars for dogs, trappings for horses, &c.

In this species we know of no varieties; and our researches have been fruitless to discover such as have been said to exist; indeed

fome

some of the differences are stated to be so trivial that they cannot fairly be confidered as distinct from the others; besides those species in which there are actual varieties are usually very abundant, and generally diffused, whereas that of the badger is one of the least numerous and most limited. We are not certain that they are to be found in America, unless we regard as a variety the animal fent from New York, of which M. Briffon has given a short description, under the name of the White Badger. They exist not in Africa, for the animal from the Cape of Good Hope, which Kolbe describes under the name of the Stinking Badger, belongs to a different species; and we doubt whether the Fossa of Madagascar, mentioned by Flacourt, is an actual badger although he fays it resembles those of France. Other travellers take no notice of it, and Dr. Shaw even fays it is unknown in Barbary. It feeems, likewise, not to exist in Asia; and that the badger was unknown in Greece is plain from Aristotle's not mentioning of it, and its having no name in the Grecian language. This animal, therefore, a native of the temperate climates of Europe, has never been diffused beyond Spain, France, Italy, Germany, England, Poland, and Sweden, and

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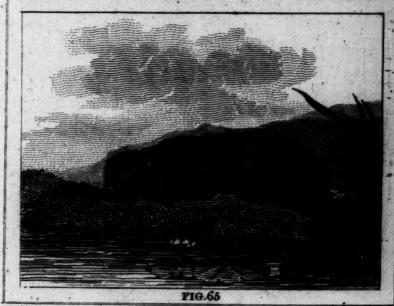
even in those countries it is not very common. There are not only no varieties but the badger (fig. 64.) does not approach any other species. Its characteristics are striking and singular; to it exclusively belong the alternate stripes upon its head, and the kind of bag under its tail; his body is also nearly white above and black below, whereas in all other animals their bellies are always lighter than their backs.

#### THE OTTER.

THE Otter (fig. 65.) is a voracious animal, but more fond of fish than flesh, and is seldom found but at the sides of lakes and rivers. He swims with more facility than the beaver, who has membranes on his hind seet only, and whose toes on the fore seet are separate, whereas the otter has membranes on all his seet; and he can scarcely walk faster than he swims. He never ventures to the sea like the beaver, but swims up and down the rivers to considerable distances. Although he can remain a long

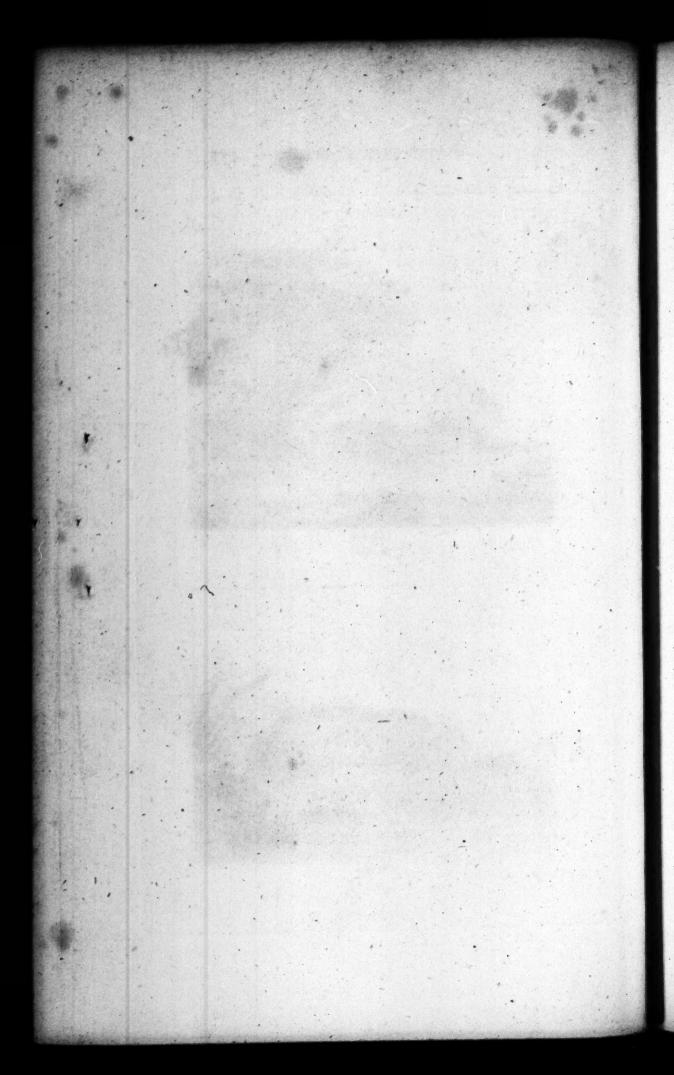


FIG.64



Otter

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a long time under water he cannot be properly called an amphibious animal; that is one equally capable of living in air or in water: his conformation is not calculated for his living in the latter element, and he requires to breathe as much as any terrestrial animal. If they happen to be entangled in a net they drown, and this evidently for want of time to destroy a sufficient quantity of the meshes to effect their escape. His teeth are like those of the martin, though larger and stronger in proportion to its fize. For want of fish, frogs, water-rats, or other food, he will eat the young branches and bark of aquatic trees; and in the fpring he will eat the young grass. He is as little afraid of cold as moisture. It couples in winter and brings forth in March, and commonly three or four at a time. The young ones are not near fo handsome as the old. From the aukwardness of its motions, deformity of figure, and a kind of mechanical cry, which it repeats almost without intermission, one should suspect it a stupid animal, He, however, becomes industrious with age, at least fufficiently so to wage a successful war with the fishes, who, with respect to instinct and fentiment, are greatly inferior to other animals; and yet I can scarcely believe he has,

not the talents but habitudes of the beaver, fuch as always going up against the stream, in order to return more eafily down the current when loaded with his prey; that of fitting up his house, and lining it with boards to exclude the water; that of laying in a quantity of fish against a future scarcity; and lastly, that of his being rendered so tame and subservient as to fish for his master, and even taking his booty into the very kitchen. All I know is, that the otter does not dig his own habitation, that he fixes his refidence in the first hole he finds. under the roots of the poplar or willow, in the clefts of rocks, and even among piles of floating wood; that in those they bring forth their young; where we also find heads and bones of fishes; that they frequently change their refidence; that they drive away their young at the end of fix weeks or two months; that those I attempted to tame endeavoured to bite, though then feeding on milk, and unable to chew fish; that a few days after they became more mild, probably from having become fick and weak; that so far from being easily habituated to a domestic life all I endeavoured to rear died very young; that, in fine, the otter is of a favage and cruel disposition; that when he gets into a fish-pond he does the same as a polecat

polecat in a hen-house, that is kill more than he can eat, and then carry away one in his mouth.

Though the otter is not known to shed his hair, yet his winter coat is browner than in fum\_ mer, fells for more money, and makes a very good fur. Some people eat their flesh, which has a disagreeable fishy taste; their retreats are always infected with the stench of fish, which they have fuffered to rot around them. Dogs have no aversion to chace the otter, whom they eafily overtake when at a diftance from his hole or the water; when feized he defends himfelf obstinately, bites cruelly, and sometimes with fuch force as to fnap their leg bones, and he never quits his hold as long as he retains his breath. The beaver, however, though not remarkable for strength, drives the otters away, and will not fuffer them to dwell near his refi-

Though this species is not very numerous, they are to be met with in Europe from Sweden to Naples, and also in North America. They were well known to the Greeks, and are probably to be found in all temperate climates, especially in those places which abound with water; for he can inhabit neither burning sands, nor dry deserts; and he equally avoids rivers which

which are sparingly inhabited, or too much frequented. I do not believe that they exist in hot countries, for the jiya, which is found at Cayenne, and called the Brasilian otter, though approximate, is a different species. The North-American otter resembles the European in every respect, except that his fur is more black and beautiful than those found in Sweden or Muscovy.

#### SUPPLEMENT.

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IT is afferted by Pontoppidan, that the otters in Norway frequent the falt, as well as the fresh waters; that they live in the holes of rocks, and that they are drawn out by imitating their voices, which is a fort of whistle; and he further says, that one that was tamed and fed on milk constantly, went into the water, and brought fish home with him to the house.

M. de la Borde has informed me there are three species of otters in Cayenne, being of different sizes, the largest weighing at least 50 pounds, and the smallest not above three or sour. He says, they are so numerous in Guinea as to be

feen

feen in troops, and fo fierce that they will encounter the dogs; but that they are eafily tamed and become very familiar. M. Aublit, and M. Oliver, both confirm this account of M. de la Borde, adding they have feen them confiderably larger than he has mentioned; and I have received one from Guinea, which appears to be the small one he alludes to; it is no more than feven inches long, measuring from the tip of the nose to the tail, the latter of which is fix inches long, its head and body is marked with regular dark spots mingled with a light yellow, its belly white, its tail brown, excepting just at the extremity, which is white also; its ears appear to be proportionally larger than the common otter, and its legs shorter.

### THE MARTIN

THE generality of naturalists have considered the Martin and Pine-weazle, as animals of the same species. That they copulate together is a circumstance which, unsupported by any other testimony than Gesner and Ray, who vol. VI. A a only

only affert it on the authority of Albertus, appears to me fo doubtful that I am inclined to think that they have no intercourse, but form two distinct and separate species: for if the pine-weafel was only a wild martin, or the martin only a tame pine-weafel, the former would uniformly preserve the same characteriffics, and the latter would vary; as in the wild cat, which always remain the fame, and the domeftic one affumes all forts of colours. The martin, on the contrary, never varies; its characteristics are as peculiar and permanent as those of the pine-weasel; this alone is sufficient to prove they are not simple varieties, but different species. Indeed there is not the smallest reason for terming the martin a domestic animal, fince he is in no degree more tame than the fox, who, like him, approaches the habitations of men in fearch of prey, nor has he any more communication with man than any other animal whom we call wild and fayage. Equally in disposition and temperament does the martin differ from the pine-weafel; the latter shuns open countries, confines itself to the bosom of the forest, and is never in great numbers but in cold climates, while the former approaches our habitations, even takes up his refidence in old buildings, hay-lofts, and in holes in the wall. · Befides.

Besides, this species is diffused in great numbers over all the temperate countries, and are even found in hot ones, as Madagascar, and the Maldivia Islands, and is never met with in the northern regions.

The martin has a sharp countenance, a lively eye, fupple limbs, flexible body, all its movements are quick, and he rather leaps and bounds than walks; with great facility he climbs walls, enters pigeon-houses, and devours eggs, pigeons, fowls, mice, rats, moles, and birds in their nefts. I reared and kept one of them a confiderable time. He was eafily tamed to a certain pitch, but appeared incapable of attachment, and retained so much of his wild disposition, that I could not suffer him to go at large. He made war upon the rats, and harraffed the poultry whenever they came within his reach. Though fastened by the middle of the body, he often got lose; at first he went to no great distance, would return in a few hours, but without testifying the smallest joy or affection to any one person, and being hungry he would call for food like a cat or dog; his excursions became afterwards more and more long, and at length he finally disappeared. He was then about a year and a half old; feemingly at the age when Nature had affumed her full Aa2 ascendency.

ascendency. Salad and herbs excepted, nothing eatable came amiss to him; he was very fond of honey, and preferred hemp-feed to every other grain. We remarked that he drank frequently, that he fometimes flept two days without intermission, and at others he would keep awake for two or three days together; that before going to fleep he would fold himself up in a round posture, and cover his head with his tail; that while awake he was in a perpetual motion, so violent and troublesome, that even had he not worried the fowls, there would have been a necessity for chaining him to prevent his breaking every thing to pieces. I had feveral other martins of a more advanced age, which had been taken in traps, but they remained totally wild, bit every person who attempted to touch them, and would eat nothing but raw flesh.

This animal, it is faid, brings forth as often as cats; and as we find young ones from fpring to autumn, we may, indeed, presume that she breeds more than once a year; and though the younger females do not produce more than three or four, those more advanced in age have fix or feven at a time. When about to be delivered they take up their refidence in some hay-loft, in the holes in a wall, which they Auff

stuff with straw or grass, in clefts of rocks, or in the hollow trunk of an old tree. When disturbed in their habitations they remove their young, of which the growth is very quick, for the one I reared had nearly attained his full growth at the expiration of the first year, from hence it may be inferred their lives do not exceed eight or ten. Its fmell is not very difagreeable, but like that of counterfeit musk. Both the pine-weafel and martin, like feveral other animals, have interior veficles which contain a strong-scented substance like that which the civet furnishes. Their flesh in some degree partakes of this odour, yet that of the pine-weafel is not altogether unpalatable: the flesh of the martin is more difagreeable, and its skin is of far less estimanithings win temperate commence message and another

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THERE is an animal in Guiana very fimilar to the common martin, its principal difference confifts in its being some trifle larger, and in having its hair sprinkled with black

black and white, a shorter tail and spotted on the head; there is also a material difference in the toes, those of the latter animal bearing a much greater resemblance to those of a rat or squirrel than to the toes of a martin.

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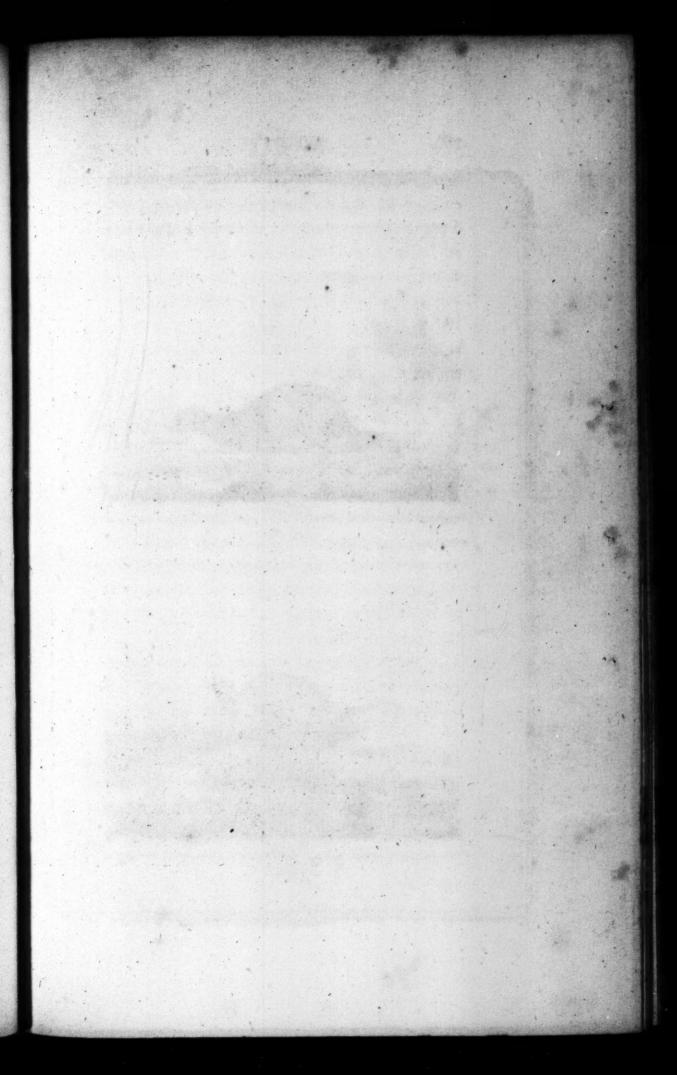
THE Pine-weafel, or as it is also called, the vellow breafted Martin, is a native of the northern countries, where the quantity of furs produced by this species alone is really aftonishing. In temperate climates they are seldom met with, and in warm ones never. There are some few in Burgundy, and also in the forests of Fontainbleau, but in general they are as rare in France as the other martin is common. There are none of them in Englands because in that country they have no extensive woods. They are alike averse to open and inhabited countries; they remain in the recesses of the forests, and conceal not themselves among rocks, but range through the thicket or climb the

the trees. They live by the chace, and destroy a prodigious quantity of birds, whose nests they seek to devour the eggs; the squirrel and dormouse likewise becomes their prey, and they are also very fond of honey. They not only differ from the martin by avoiding the habitations of men, but also in their manner of endeavouring to escape in the chace. When the former finds himself pursued, he makes to his favourite hay-loft, or hole; but the latter humours the chace for some time, and then will climb up the trunk of some tree, and from thence take a view of his pursuers as they pass along. The track which he leaves in the fnow has the appearance of being made by some large animal, because he always leaps and his two feet strike the ground at the same time. Though rather larger than the martin his head is shorter, but his legs are longer, and consequently he runs with more ease. His neck is yellow, whereas that of the martin is white; his hair is also finer, more thick, and less subject to shed. The female does not prepare a bed for her young, and yet she lodges them very commodiously. Squirrels form nests on the tops of trees with as much skill as birds; when the pine-weafel is near her time she climbs to fome Matria.

some squirrel's nest, drives away the owner, enlarges it, and there deposits her young; she fometimes takes the nefts of owls or buzzards. or holes in old trees, from which the foon diflodges the woodpeckers, and other birds. She brings forth in fpring, and never more than two or three; the young ones come into the world with their eyes closed, but they nevertheless soon acquire their full growth. The mother brings them eggs and birds until they are able to go out, and then she takes them abroad to hunt with her. Birds are so well acquainted with their enemies that they fend forth the same notice of danger upon seeing this animal as when they perceive a fox; and a proof that it proceeds more from hatred than fear, is there not only giving this alarm, but also following these and all other carnivorous animals, and never doing so at the approach of the ftag, roe-buck, hare, &c.

Pine-weafels are as common in the northern parts of America as they are in Europe and Afia. They are found in Canada, at Hudson's Bay, and as far north in Asia as the kingdom of Tonquin and the empire of China. They must not, however, be confounded with the fable, an animal whose fur is much more precious. The fable is black, but the pine-0.000

weafel





Pole Cat.



Ferret ..

weafel is brown and yellow; the brown part of the skin is the most in estimation, and that extends along the back to the very extremity of the tail.

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## THE POLECAT.

THIS animal, (fig. 66.) greatly refembles the martin in temperament, disposition, habits, and form of its body. Like him he approaches our dwellings, mounts to their roofs, and fettles himself in hay-lofts, barns, and unfrequented places; from whence he steals by night into farm-yards, aviaries, and pigeon-houses, where, without making fo much noise as the martin, he does more mischief; he wrenches off all their heads, and then carries them away, one by one, to his hole or dwelling. If, as it often happens, he cannot convey them away entire, from the smallness of the entrance, he eats the brains on the spot, and then retires with their heads. He is particularly fond of honey, will attack the hives in winter, and force the bees to abandon them. They are scarcely ever found at any great distance from inhabited ВЬ VOL VI. places.

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places. They copulate in spring, when the males will fiercely contend on the roofs and sheds for the semale. They then leave her, and go into the fields or woods for the summer, but she remains in her dwelling, and does not take her young ones out till towards the end of the summer; she produces from three to sive, does not suckle them long, but soon accustoms them to suck blood, and the eggs of birds.

In villages they chiefly fubfift on poultry, and in the fields or woods on what the chace affords them; when in the latter they fix their refidence in the burrows of rabbits, clefts of rocks, or trunks of hollow trees, from whence they issue at night in quest of the nests of partridges, larks, and quails; they climb trees to get at those of other birds; are constantly on the watch for rats, field-mice, and moles, and are at continual war with the rabbit, who cannot escape, as they enter their burrows with eafe. A fingle family of polecats is fufficient to destroy a whole warren; and indeed this would be a fimple method of diminishing their number where they are found too numerous.

The polecat is rather less than the martin; it has a shorter tail, a sharper shout, and its hair

hair is more black and bushy. It has some white hair on its forehead, and about the nofe and mouth. They differ very much in voice, that of the martin being sharp and loud, and that of the polecat deep and hollow; but both of them, as well as the squirrel, have an harsh, angry growl, which they often repeat when irritated; the odour they fend forth is also very different, that of the former being rather agreeable, but the latter to the last degree fetid. When heated or enraged it fends forth an intolerable stench to a considerable distance. The dogs will not eat its flesh, and its skin, though good in itself, is of little value, because it can never be entirely divested of its natural odour; which odour proceeds from two little veficles, fituated near the anus, which contain and exude an unctuous matter highly difagreeable, not only in the polecat but in the ferret, weafel, badger, &c. but which constitutes a perfume in the civet-cat, pineweafel, and feveral other animals.

The polecat seems to belong to the temperate climates. Few of them are sound in the northern regions, and they are still more scarce in the southern. The Stinkard of America is a different animal; nor does the species of polecat appear to extend farther than from the

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confines

confines of Italy to Poland; it is certain they avoid the cold, and they refort to houses in the winter, and their footsteeps are never seen in the snow, either in the woods or fields distant from human dwellings, and we may fairly conclude they are averse to heat, from never being sound in the southern regions.

### THE FERRET TO A SECOND SET

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different, tract of the former being retired

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is can never be entirely divided of its auditor SOME authors have doubted whether the Ferret (fig. 67.) and polecat did not belong to the fame species. Perhaps the resemblance there sometimes is in their colour first gave rise to this doubt. The polecat, however, is a wild animal, and a native of temperate climates, whereas the ferret is a native of warm countries, and cannot exist even in France, but in a domestic state. The ferret is preferred to the polecat for driving rabbits from their burrows, because he is more easily tamed. They both have a ftrong and disagreeable smell, yet as they never intermix, and differ in a number of effential B b 2 confinos

effential characters, they may with fafety be pronounced two distinct species. The ferret has a longer and thinner body, a narrower head, and a sharper snout, than the polecat. It has not the fame fagacity in providing subfiftence, and unless taken care of, and nourished in the house, it cannot even exist, at least in our climates, for those which have been lost in the burrows of rabbits have never multiplied, but most probably perished by the severity of the winter. The ferret also, like other domestic animals, varies in colour, and is as common in hot countries as the polecat is scarce. The female is smaller than the male: and when in season, Gesner says, she has even been known to die if her desires were not gratified. They are reared in casks or chests, where it is usual to furnish them with beds of flax. They fleep almost perpetually, but no fooner are they awake than they eagerly feek for food, which confifts of bran, bread, milk, &c. The females bring forth twice a year, and go fix weeks with their young. Some of them eat their young almost as soon as they are brought forth, are immediately in season again, and then have three litters in the year, each of which confifts of from five to nine.

Builder

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This animal is by nature a mortal enemy to the rabbit. If even a dead one is presented to a young ferret, although he had never feen a rabbit before, he flies at and tears it with fury; but if it be alive, he feizes it by the nose or throat, and fucks its blood. When let into the burrows of rabbits, it is necessary to muzzle him, that he may not kill them in their holes, but only oblige them to run out that they may be entrapped in the nets; besides, if he is suffered to go in unmuzzled, there is great danger of his being loft; for having fucked the blood of the rabbit, he will fall afleep; and fmoking the hole is not always a successful expedient to bring him back, because as the burrows frequently communicate with each other, he is apt to be the more bewildered the more he is furrounded with smoke. The ferret is also made use of by boys in searching for birds nests in the holes of walls or trees.

Strabo fays the ferret was brought from Africa into Spain; which does not appear void of foundation, as Spain is the native climate of rabbits, and the country where formerly these animals most abounded. It is probable, therefore, that the rabbits having increased so much as to become incommodious, the ferret was introduced to diminish them, instead of encountroduced to diminish them, instead of encountric strategies.

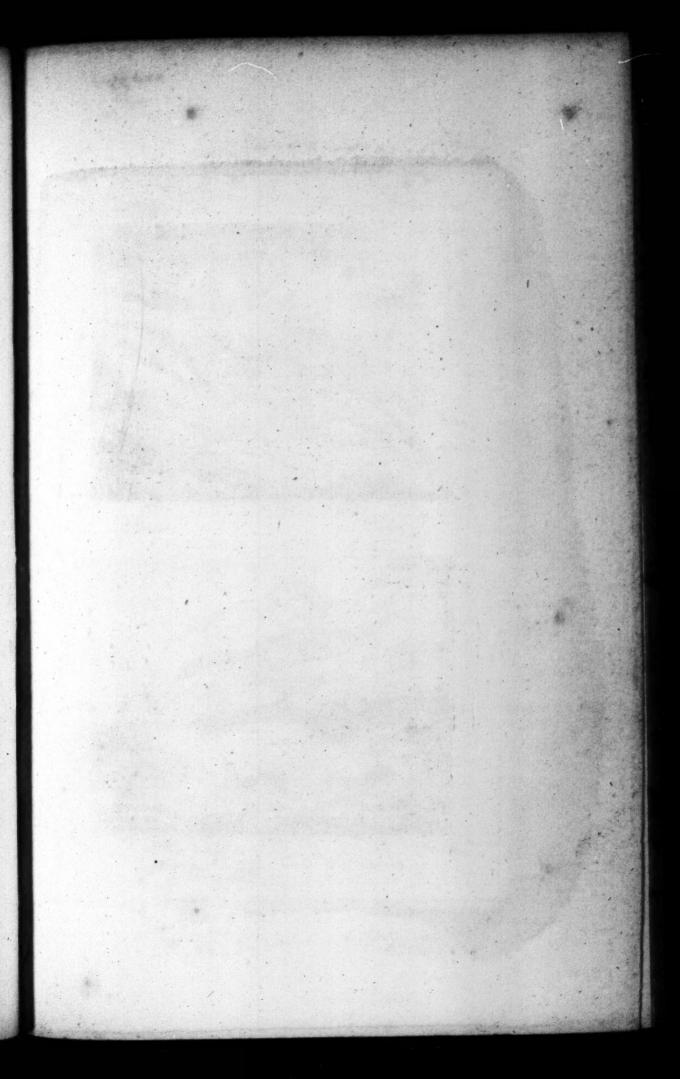
raging

raging the race of polecats, from which no advantage could have accrued but the death of the rabbit, whereas by the ferret some benefit is also obtained by the hunter. The ferret, though easily tamed and rendered docile, is exceedingly irascible; he has always an ill smell, but more so when heated or irritated. He has lively but instamed eyes; all his movements are quick, and is besides so strong that he will easily master a rabbit three or sour times as big as himself.

Notwithstanding the authority of interpreters and commentators, there is still doubts whether the ferret be the ichis of the Greeks. "The ictis (fays Aristotle) is a kind of wild weafel, smaller than the little Maltese dog, but resembling the weasel in its hair, form, whiteness in the under parts of its body, and also in its cunning. Though eafily tamed, it does mischief among the beehives, being extremely fond of honey. It will also attack birds, and, like the cat, its genital member is bony." It appears first a contradiction, in saying the ictis is a species of wild weafel, which is easily tamed, for with us the common weafel is not to be tamed at all; fecondly, the ferret, though larger than the weafel, cannot be compared with the lap-dog in point of fize; thirdly, it is evident that the ferret does not possess the cunning

of the weafel, nor is it even capable of artifice } and laftly, it does no mischief to beehives, nor is it fond of honey. I enquired of M. de la Roy, intendant of the royal forests as to this last fact, and this was his answer: " M. de Buffon may be affured that the ferret has no absolute inclination for honey; but if kept on flender diet, may be forced to eat it. For four days I fed some with bread soaked in water mixed with honey; but though they are pretty large quantities of it the last two days, the weakest of them was become sensibly more thin." This is not the first time M. de la Roy has furnished me with facts for the advantage of this work. Having no ferret in my poffeffion. I made the like experiment on the ermine. by giving him nothing but honey to eat, and milk to drink; but he died in a few days. It appears, then, that neither the ferret nor ermine are fond of honey, like the ictis of the ancients. which leads me to think that the word ictis is nothing more than a generic name; or if it denotes any particular species, it is rather that of the martin or polecat; both of which possess the cunning of the weafel, attack beehives, and are particularly fond of honey. the landog in point of the; thinky le is en-

dent that the force does not nothing the counting





Pine Weasel .



#### THE WEASEL.

THE Weafel (fig. 69.) is as frequent in warm and temperate climates, as it is scarce in cold ones; the ermine (fig. 70.) on the contrary, is numerous in the northern, is scarcely to be met with in the temperate, and never in the warm climates. These animals, therefore, form two distinct species. The circumstance which may have given rife to their being confounded, was possibly our common weafel being fometimes white during winter; in this characteristic they are alike; but there are others in which they widely differ. The ermine, red in fummer, and white in winter, has, at all times, the end of the tail black; whereas the end of the weafel's tail is yellow, even of that which turns white in the winter; it is besides much smaller, and its tail is shorter; nor shunning the habitations of man does the weafel, like the ermine, refide in woods and deferts. I have kept both species together, but found no reason to suppose that animals which differ in VOL. VI. Cc climate.

climate, temperament, and disposition, would intermix. Among the weafels, it is true, there are some larger than others; but this difference never exceeds an inch in the whole length of the body; but the ermine is full two inches longer than the largest weasel. Neither of them are to be tamed, but must always be kept in an iron cage. Neither of them will eat honey, nor ranfack the bee-hives, like the martin and polecat: and, therefore, the ermine is not the wild weafel, the ictis of Aristotle, which he fays is eafily tamed, and very fond of honey. So far are the weafel and ermine from being eafily tamed that they will not even eat if taken notice of, but are in continual agitations, endeavouring to conceal themselves; and in order to preserve them it is necessary they should be supplied with a parcel of wool or flax, in which they may hide themselves, and which they make a receptacle for whatever is given them, and feldom ever eat but in the night; and rather than eat fresh meat they keep it for two or three days that it may corrupt, They fleep three parts of the day, and even when at liberty they fet apart the night for the fearch of their prey. When a weafel enters a hen-rooft he never meddles with the cocks or old hens, but fingles out the pullets and young chicks evianulo.

chicks, which he kills by a fingle bite on the head, and then carries away the whole one after another; he also destroys the eggs, and fucks them with incredible avidity. In winter they generally refide in granaries, or hay-lofts, where the females often continue in the fpring. and bring forth their young among the hay and straw; and during this period she makes war with the rats and mice with more fuccess than the cats, fince the follows them into their holes, and so renders it impossible for them to escape; she also attacks and destroys the pigeons in their houses, and sparrows, and other birds, in their nests. In summer they remove to fome distance from the houses, always choosing low grounds, about mills and ftreams, hiding themselves among the bushes, to catch the birds; they not unoften take up their abodes in old willows, where the females fometimes bring forth their young, for which she prepares a bed of grass, straw, and leaves; she litters in the fpring, and it generally confifts of from three to five. They are brought forth with their eyes closed, but they very soon acquire growth and strength sufficient to follow the mother to the chace. They attack adders, water-rats, moles, field-mice, &c. and traverfing the meadows devour quails and their eggs.

Cc2

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weed

have not a regular walk, but bound forward by unequal and precipitate leaps; when inclined to mount a tree they make a fpring, by which they are elevated several seet at once; and thus they also act when they attempt to a seize a bird.

These animals have also a very strong and disagreeable smell, which is much worse in fummer than winter, and when purfued or irritated they infect the air to a great diffance. They always move with all possible filence, and never exert their voices but when they are hurt, of which the found is rough, and very expressive of anger. As their own odour is very bad they feem to feel no inconvenience from any foreign stench. A peasant in my neighbourhood took three new-littered weafels out of the carcass of a wolf, which had been fufpended by its hind legs from a branch of a tree; and though the wolf was almost rotten the female weafel had brought grafs and leaves, and made a bed for her young in the thorax of this putrid carcals.

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moles, field-unites, &c. and travelling the mancover through contents but been eggs. They

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### SUPPLEMENT.

THE Comtesse Novan declares in a letter she favoured me with that I have done great injustice to the character of the weasel, in saying that it is not to be tamed, since she had reared one who would lick her hand when she gave it food, and was equally fond and familiar as a dog or squirrel. And M. G. de Mornas assures me that he trained one that would follow him about; and he says that they are to be tamed by frequently stroking them on their backs, and beating them when they offer to bite.

# THE ERMINE.

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three days without any other food, it died after

THE weafel with a black tail is called the Ermine or Roselet (fig. 71.) the ermine when it is white, and the roselet when it is red or yellowish. Though not so numerous as the common

common weafel, yet many of them are found in ancient forests, and sometimes during winter in the neighbourhood of woods. They are easy to be distinguished at all times, as the end of their tails is always black, and the extremities of their ears and feet are white.

We have little to add, with respect to this animal, to those observations we made in treating of the weafel. I kept one for more than a twelvementh, which to the last remained wild, and also retained its noisome odour. It is a pretty little animal, and but for the last circumstance, an agreeable one; it has lively eyes, a pleasing countenance, and so rapid in its motions that it is impossible for the eye to follow them. It was always fed with eggs and flesh, but the latter he would not eat until it became putrid. It disliked honey, and having kept it three days without any other food, it died after eating a very little. The skin of this animal is very valuable; it is far more beautiful than that of the white rabbit; but it very foon changes fomewhat yellow; though indeed the ermines of these climates have always a yellow shade.

Ermines abound in the north, particularly in Norway, Russia, and Lapland; where, as every where elfe, they are red in fummer, and white in winter. They feed upon a species of rats Domadoo

and

Norway and Lapland, and of which we shall hereaster treat. They are scarce in temperate, and never found in warm climates. The animal of the Cape, which Kolbe calls by that name, and whose sless he says is wholesome and well-tasted, is not an ermine, but a different species. The weasels of Cayenne, mentioned by M. Barrere, and the grey ermines of Tartary and the North of China, mentioned by some travellers, are also animals different from our weasels and ermines.

#### SUPPLEMENT.

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IT is remarked by Pontoppidan that, in Norway, the ermines live among the fragments of rocks; that he catches mice, is very fond of eggs, and that when the weather is calm, he will swim across the sea to the neighbouring islands, for the sake of sea fowls which are there in great numbers. He says it is afferted that when the semale brings forth upon an island, she will bring her young to the continent

nent upon a piece of wood directing it with her fnout; that this animal, though very small, will kill bears and rein-deer, which it does by surprising them when asleep and fastening to their ears, where he holds so fast that they cannot disengage him; he also springs upon the backs of eagles and heath-cocks, and will suffer them to take him up in the air, from whence by sucking their blood he soon forces them to descend.

#### THE GRISON.

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from our, wealth and carpines, we the

This animal is added by our author in his Supplement, it having been introduced in a Dutch Edition of his work, where he fays, it is thus mentioned by M. Allamand. "This little animal, fays he, was fent to me from Surinam, and was named in the catalogue grey-weafel, from which I derived Grison. (fig. 72.) The upper part of its body is brown, but the hair having white points, it has the appearance of being a brownish grey; the throat and neck is a bright grey; its nose, and



Engraved for Barri Buffon



FIG.72



Squird

Published by J.S.Barr, Mar. 17. 1792.

and the lower part of its body and legs are black, which forms a fingular contrast with its head and neck; it is about feven inches long, its head is large in proportion to its body; its ears are nearly a half circle, its eves are large, it has ftrong teeth, five toes upon each foot, yellow claws, and a long tail which ends with a point. It more nearly refembles the weafel than any other animal, but yet it certainly belongs to some other species. I cannot find it mentioned by any traveller, and many persons who had resided at Surinam to whom I shewed it, declared it to be a stranger to them; from which it is evident, it must be a scarce animal, even in its own country, and live in unfrequented places; of course I have not been enabled to obtain any farther particulars of it? A souveymoo ni shand oshi rest oro!

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THE Squirrel (fig. 73.) is a pretty little animal, is only half wild, and, from its gentleness, docility, and even innocence of manners, vol. vi. D d is

is almost entitled to an exemption from this class. He is neither carnivorous nor injurious though he fometimes feizes on birds; his common food confifts of fruit, almonds, nuts, beech mast, and acorns; he is handsome, lively, alert, and industrious; his eyes are full of fire, he has a good countenance, nervous body, and supple limbs; the beauty of his form is heightened by a fpreading tail, refembling a plume of feathers, which he raifes above his head, and forms a kind of shade against the fun. The under part of his body is furnished with an apparatus to the full as remarkable, and which indicate ftrong generative faculties. The squirrel may be said to be less a quadruped than any other four-footed animal. He generally holds himself almost upright, using his fore feet like hands in conveying food to his mouth. Instead of hiding under the earth he is continually in the air, approaching the birds by his lightness and activity; like them he dwells upon the tops of trees, traverses the forests, by leaping from branch to branch, builds himself a nest, picks up grains and feed, drinks the dew, and descends not to the earth but when the trees are violently agitated. He is never found in fields nor open countries; he approaches not the habitations of men, remains

mains not among bushes and underwood, but refides among the lofty trees of the forest. Still more does he avoid the water than the earth; and it is even afferted, that when he wants to cross a river, or ftream, he uses the bark of a tree as a boat, and makes his tail supply the place of rudder and fails. He sleeps not like the dormouse, during winter, but is always awake and lively, infomuch, that if only the trunk of the tree is touched, on which he may be reposing, he instantly slies to another, or conceals himself under a branch. He collects a quantity of nuts during the fummer, which he deposits in the hollow part of some old tree, and has recourse to them in the winter: which even then he will endeavour to obtain by scratching off the snow as he passes along. His voice is more shrill and loud than that of the martin; he has besides a lowd growl of discontent, which he makes when irritated, As his motions are too quick to walk he generally leaps, or bounds forward; and fuch is the sharpness of his claws, and agility of body, that he inftantaneously climbs a beech tree let the bark be ever to fmooth.

During the fine nights in summer the squirrels may be heard crying as they chace each other among the trees Seemingly averse

to the heat of the fun they remain all day in their holes, or nefts, from which they come at night to feed, copulate, exercise and divert themselves. Their nests are clean, warm, impenetrable to rain, and generally formed where the large branches fork off into small ones. They begin its formation by carrying small twigs, which they interweave with moss; this they repeatedly press and stamp upon to give it capacity and folidity to hold themselves and their young; they only leave one opening, which is near the top, and that fo small as to be hardly fufficient for them to go in and out; over the opening is a kind of roof, in a conic form, which shelters the whole, and occasions the rain to run off on each fide. The females usually produce three or four at a litter; they come in feason in the spring, and bring forth about the end of May, or beginning of June. They change their hair at the close of winter, and the new hair is more red than that which they throw off; they comb and dress it with their fore feet and teeth, are very cleanly, have no ill smell, and their flesh is tolerably good to The hair of their tail is used to make brushes for painters, but their skin is of no value to the furrier. To brand ad your alors and

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Several species approach that of the squirrel, though there are few varieties in the species itself. Some few are of an ash-colour, but the most of them are inclined to red. The petits-gris are a different species, and remain always grey. And, without mentioning the flying squirrels, the white squirrel of Cambave. which is very small, that of Madagascar, called thithin, which is grey, and, as Flacourt fays, is neither handsome nor easily tamed, the white fquirrel of Siam, the grey spotted squirrel of Bengal, the streaked squirrel of Canada, the black squirrel, the large grey squirrel of Virginia, the white striped squirrel of New Spain, the white Siberian squirrel, the variegated squirrel, or mus ponticus, the little American squirrel, those of Brasil and Barbary, the palmist, &c. which form so many separate and distinct species from those which we have been treating of, we shall find them all nearly the fame, Their figures, moder, and mannersman

## SUPPLEMENT.

describes to be finalist to thate of Sur-

The Squirrel is so very numerous in Siberia, that we may rather suppose it to be a native of the northern than temperate regions.

M. Gmelin

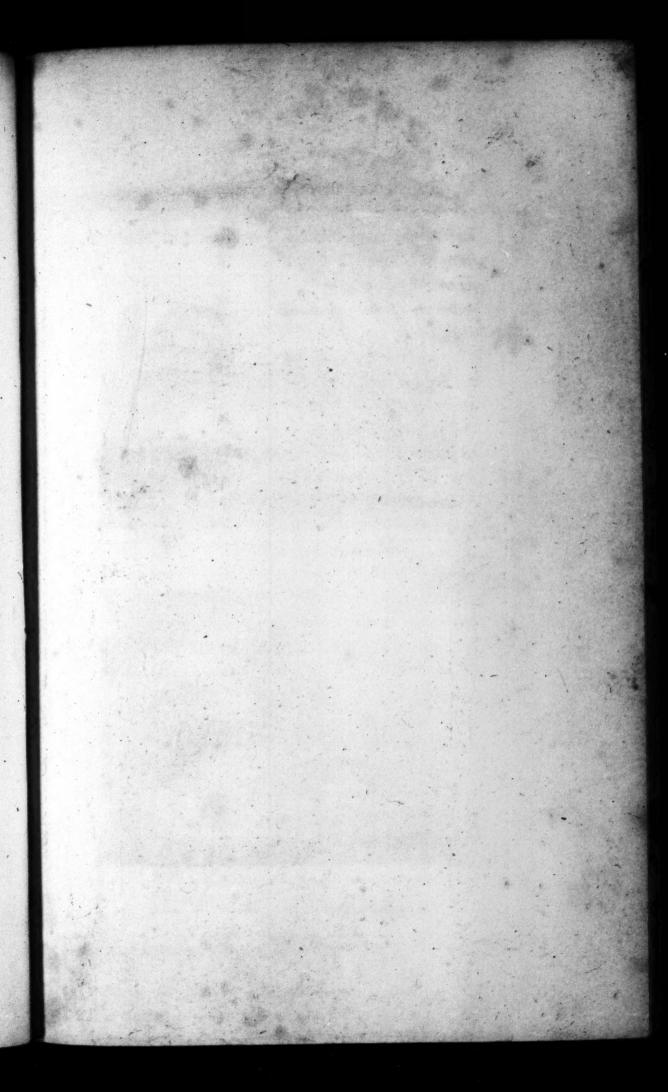
M. Gmelin fays, they take them there in traps baited with dry fish. M. Aubry, curate of St. Louis, has an entire black squirrel sent him from Martinico, and which had also little or no hair on its ears.

M. de la Borde mentions a species of squirrel at Guinea, which he fays is of a red colours lives in the woods, feeds on grain, and is about the fize of a rat; is always feen alone, and is eafily tamed. But I very much doubt whether this is a real squirrel, from its being found in fo warm a climate. M. Kalm fays there are feveral species in Pennsylvania, that the smallest fort are the most handsome, and that the larger kind are very destructive to the plantations of maize, and that they will come in large bodies and destroy a whole field in a fingle night, nay, that they are so mischievous, that a price is set upon their heads. Their flesh is esteemed by the inhabitants, but no value is put upon their fkins. Their figures, modes, and manners, he describes to be similar to those of Sweden, and states them to be more numerous in Pennsylvania than formerly.

The Squired is to very numberous in Sibe.

M. Guella

ris, that we may rather (uppose it is but a native of the inscripting than rempersion replains.





Water Rat.

Rat.



Mouse.

Long tailed Field Mouse . Short tailed D. D.

ablence would be hardly perceptible. It is this great mumber of approximate fuecies that field

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this ; Schildred to beautiful which to IF we descend by degrees from great to small, from strong to weak, we find that Nature has uniformly maintained a balance throughout her works; attentive only to the prefervation of each species, she creates a profusion of individuals, and supports by numbers those she has formed of a diminutive fize, and left unprovided with arms or courage; she has not only enabled these inferior species to resist and maintain their ground by their own numbers, but has added a kind of supplement to each, by multiplying the neighbouring species. The rat (fig. 74.) the mouse (fig. 76.) the field mouse (fig. 77.) the water-rat (fig. 75.) the short-tailed field mouse (fig. 78.) the dormoule, the shrew moule, with several others which I shall not mention here, because they do not belong to our climates, form fo many distinct and separate species, but yet so little varied, that should any one chance to fail, its absence

absence would be hardly perceptible. It is this great number of approximate species that first gave naturalists the idea of genera, an idea which can only be employed when we view objects in the gross, but which vanishes when we consider Nature minutely.

Men began by appropriating different names to objects which appeared to be distinct; and at the same time, they gave general denominations to fuch as feemed to refemble each other. Among unenlightened nations, and in the infancy of languages, there are hardly any but general names, or vague and ill-formed expreffions for objects of the fame order, though in themselves highly different. Thus the oak, beech, linden, fir, yew, pine, had, at first, no name but that of tree; afterwards the oak. beech, and linden, were called oak, when they came to be diffinguished from the fir, pine, and yew, which, in like manner would be called fir. Particular names could proceed only from a minute examination of each species, and of course those names would be increased in proportion as the works of Nature were more studied, and better understood. To represent Nature, therefore, by general denominations, or genera, is to refer us back to the dark and infant state of human knowledge. Ignorance 

Ignorance produced genera, but science will ever continue to create proper names; and we shall not be afraid of increasing the number whenever we have occasion to delineate different species.

Under the generic name of rat several species of little animals have been comprised and confounded; but we appropriate this name folely to the common rat, which is of a blackish colour, and lives in our houses; they generally inhabit barns and granaries, from whence, when food is scarce, they invade our dwellings. The rat is a carnivorous, or, if the expression may be allowed, an omnivorous animal; he prefers hard substances to soft ones, he gnaws wool, linen, and furniture of all forts; eats through wood, makes holes and hiding places in walls, ceilings, and behind wainfcots, from whence he issues in search of food, and frequently returns with as much as he can drag along, forming, especially when he has young to provide for, a magazine of the whole. The females bring forth feveral times in the year, though mostly in the fummer, and have five or fix at a time. They love warmth, and in winter they generally shelter themselves near chimnies, or among hay and straw. In defiance of cats, poison, and traps, these animals multiply so Ee VOL. VI. much

much as frequently to do confiderable damage. In old country-houses, where great quantities of grain are kept, and where neighbouring barns and hay-stacks favour their retreat, they often become so numerous that the inhabitants are under the necessity of quitting their dwellings, unless they happen to devour each other, and this is no uncommon thing when they are straitened for provisions; in case of a famine being occasioned by their numbers the strong kill the weak, open their heads, first eat the brains, and then the rest of the body: the next day hostilities are renewed in the same manner, nor do they suspend their havock until the majority are destroyed; and this is the reason why, in a place that has been for some time infested with rats, they seem to disappear of a sudden, and return not for a long time. It is the same with field-mice, whose prodigious increase is checked solely by their cruelties to each other when provisions become. scarce. Aristotle attributes their sudden destruction to rains, but rats are not exposed to the weather, and field-mice know well how to fecure themselves from its effects, for their subterraneous habitations are not even moist.

Rats are as lascivious as voracious; they have a kind of yelp in their amours, and when they

they fight they cry. They prepare a bed for their young, and almost immediately provide them with food; and when they first quit their hole the mother watches, defends, and will even fight the cats to fave them. A large rat is more mischievous, and almost as strong as a young cat; its fore-teeth are long and ftrong; and as the cat does not bite hard, but is obliged to depend upon her claws, she must not only be vigorous but well experienced to conquer. The weafel, though smaller, is yet a more dangerous enemy, because he can follow the rat into its hiding places: the combat between these two is often sharp and long, from their strength being nearly equal, but their manner of fighting is different. The rat can only wound by fnatches, and with his fore-teeth, which are more calculated for gnawing than biting, and have but little strength; whereas the weafel bites fiercely with his whole jaw, and instead of letting go sucks the blood through the wound, and therefore the rat always falls a victim to this formidable enemy.

There are many varieties in this species, as there are in all which have numerous individuals. Beside the common rat, which is nearly black, there are some brown, grey, reddish, and quite white. The white rat, like

all animals perfectly white has red eyes. The whole species, with all its varieties, appear to be natives of temperate climates, and have been diffused in much greater abundance over warm countries than cold ones. Originally they had none in America, but were transported with the first European settlers, and where they encreased fo fast as to become the pest of the colonies, and where indeed they had no enemies but the large serpents which swallowed them up alive. The European ships have also carried them into the East Indies, all the islands of the Indian Archipelago, and into Africa, where they are now found in great numbers. In the north they have never multiplied beyond Sweden, and those which are called Norway and Lapland rats, are animals of a different species.

#### SUPPLEMENT.

IT is afferted by Pontoppidan, that rats cannot live farther north than Norway, and that those on the banks of the fouth fide of the river Vorman, very soon die if they are taken to the north, north, which he attributes to the exhalations of the soil. From the Vicomte Querhoënt I understand that rats multiplied so fast on their first introduction to the Isle of France, as even to compel the Dutch to leave it: they have been somewhat lessened by the French, but they still remain in great numbers. He adds, that when a rat has resided some time in India he acquires a very strong sinell of musk; and this is confirmed by M. la Boullaye-le-Goux in his voyages. The Dutch voyagers also say there are scented rats in Madura.

#### THE MOUSE.

THE Mouse is much smaller than the rat, more numerous and more generally diffused. Its instinct, temperament, and disposition is the same; and it differs only from its weakness, and the habits which it thereby contracts. Timid by nature, and familiar from necessity, fear and want are the sole springs of its actions. It never leaves its hiding place but to seek for food;

food; nor does it go from house to house, like the rat, unless forced; nor is it near so mischievous; its manners are mild, and to a certain degree it may be tamed, but is incapable of attachment; how indeed is it possible to love those who are perpetually laying snares for us! Though weak he has more enemies than the rat, from whom he has no means of escape but his agility and minuteness. The owls, birds of prey, cats, weafels, and even rats, make war upon mice, while man, by fnares and other means, destroy them by thousands. But for their immense fecundity they could not subfift; they bring forth at all feafons, feveral times in the year, generally have five or fix at a time, and which in less than fifteen days are sufficiently strong to shift for themselves. As they so soon attain perfection, their duration of life must be short, a circumstance which must heighten our ideas of their prodigious multiplication. Aristotle tells us, that he put a pregnant mouse into a vessel with plenty of corn, and that he foon after found 120 mice all fprung from the fame mother.

These little animals are not ugly, they have much vivacity and acuteness in their looks; nor is there any foundation for that horror some people hold towards them, but the little surprises and

incon-

inconveniences they sometimes occasion. All mice are rather white under the belly, some are quite white, others more or less brown or black. The species is generally spread over Europe, Asia, and Africa; but it is said they had no mice formerly in America, and that, though now so very numerous, they were originally brought from the old Continent. Certain it is that this little animal, while it sears human so-ciety closely attends it, and this probably from its natural appetite for bread, cheese, bacon, oil, butter, and other kinds of food which man prepares for himself.

#### THE FIELD-MOUSE,

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ESPONA COURT ENTERING CONTROL OF THE BUTTON A MANAGE AND

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THIS animal, fometimes called the mulot, is less than the rat, but larger than the common mouse. It is not to be found in houses, but lives in woods and fields. It has very large and prominent eyes; and it differs also from the rat and mouse in the colour of its hair, which is tolerably white under the belly, and a reddish

a reddish brown on the back; they are very generally and abundantly diffused, especially in hilly countries. They appear to be a long time in attaining their full growth, as they vary confiderably in fize. The largest are better than four inches in length, and the fmaller, which appear to be aged, are an inch shorter; and as they are found of all the intermediate fizes there can be no room to doubt their being the fame species. It was probably from ignorance of this fact that some naturalists distinguished them into two species, calling the one the Great Field Rat, and the other the Field Mouse. Ray, who first fell into this error, feems to acknowledge himfelf unacquainted with but one species; and though the short description he gives of two species appear to differ, yet we ought not to conclude that both exist, first, Because he himself knew but one; fecondly, Because, notwithstanding all my researches, I have been enabled to discover but one kind; thirdly, Because Gesner, and other naturalists, speak only of one, under the name of mus agrestis major, which they affirm to be common; and because Ray says the other kind, which he calls mus domesticus. medius, is also very common; since some of these authors must have seen both, if both

were

were so very common; fourthly, Because as in this same species large and small individuals are found, that circumstance might lead them to consider the former as one, and the latter as another; and, lastly, Because the descriptions are in no respect complete; and we ought not to trust such vague characteristics to establish a specific difference.

The ancients, indeed, mention two species the one under the denomination of mus agrestis major, the other under that of mus agrestis minor. These two species are very common, and we are as well acquainted with them as the ancients were; the first is our Long-tailed Field-Mouse; and the other, known by the name of the Short-tailed Field-Mouse, but as it materially differs both from the rat and long-tailed field mouse I have not followed the generic appellation, but adopted that of the Italian, and call it campagnol.

The long-tailed field-mice, as we have already intimated, are fond of dry and elevated grounds. They are to be found in great numbers in woods and in adjoining fields. They conceal themselves in holes under brush-wood, or trunks of trees, in which they amass such quantities of nuts and acorns that a bushel has been found contained in one of them; and this vol. vi. F f provision

provision is not proportioned to the wants of the animal, but to the capacity of the place allotted for its reception. These holes are generally more than a foot under ground, and often divided into two cells, the one for living in with their young, and the other as a granary. I have often witneffed the confiderable damage done by these animals. They will follow the furrow of a plough and take up all the newfown acorns, which they convey to their holes; and in a nurlery of trees they are more destructive than all the birds, and other animals put together. The only method I could ever find to prevent this evil, was to let traps at every tenth pace distance, through the whole extent of the new fown ground. No other preparation is necessary than placing a roasted nut under a flat stone, supported by a piece of stick, to which the nut must be fastened; this they are very fond of, and will come eagerly to feize; but no fooner do they touch it than the stone falls and crushes them to death. I have made use of the fame expedient against the campagnol, which is also very destructive. When I first adopted this method, I defired care might be taken to bring me all the animals that were caught in the traps, and it was with aftonishment I found more than 100 were taken daily, and this in a piece mail vene

piece of land confifting of not more than 40 acres. I obtained more than 2000 in this manner, from the 15th of November to the 8th of December: their numbers afterwards decreafed gradually, till the hard frofts commenced, when they retire to their holes, and feed upon what they have collected. A number of years have elapsed fince I first made this experiment, and which I always repeated when I fowed trees, and never had reason to complain of its inefficacy. It is in autumn they chiefly abound; in foring they are not so numerous, for if their provisions run short during the winter the strong devour the weak; they also eat the short-tailed species, and several forts of birds, beginning always with the brains and finishing with the rest of the body. I once put a dozen of these field-mice in a cage, and accustomed them to be fed every morning by eight o'clock; but neglecting them one morning for about a quarter of an hour, one of them had been eaten by the rest; next day they devoured another, and in a few days only one remained; the others having been killed and in part devoured; even the one that furvived had his legs and tail mutilated. If it asstored additions and and tempor

The rat multiplies very fast, but the increase of the long-tailed field mouse is more consider.

Ff 2 able

able. The latter brings forth more than once a year, and generally nine or ten at a time, while the rat seldom produces more than five or six. A peasant, on my estate, took twenty-two out of one hole, consisting of two dams and twenty young ones.

This animal is very generally diffused over Europe. It is sound in Sweden, and is called by Linnæus, mus cauda longa, corpore, nigro flavescente, abdomine albo. It is very common in France, Italy, and Switzerland. Gesner calls it mus agressis major. It is also in Germany and England, where it is called the sield-mouse. Its greatest enemies are the wolf, fox, martin, birds of prey, and its own species.

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## THE WATER-RAT.

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them to be ted every morning by clean o'clean!

THIS animal is about the fize of a common rat, but in its habits and disposition more resembles the otter than the rat. Like the otter it frequents fresh water; is found on the borders of rivers, rivulets, and ponds, and seldom feeds on any thing but

but fish, though he will fometimes eat frozs, water infects, and even the roots of plants. He has not, like the otter, membranes between his toes; an error which originated with Willoughby, and has been copied by Ray and other naturalists. Though every toe is separated, he fwims with facility, keeps a long time under water, and carries off his prey to eat upon the grass or in his hole. Sometimes he is surprised in his hole by fishermen who are searching for craw-fish, whose fingers he bites, and then plunges into the water as his only place of refuge. His head is shorter, his nose broader, his hair more erect, and his tail much larger than the common rat. Like the otter he avoids large rivers, or rather those which are too much frequented. The dogs pursue it very furiously. He is never found in houses or barns, nor does he wander so far from the borders of the waters as the otter, which is fometimes found at a league distant upon land. The water-rat frequents not high grounds nor dry plains, but in moist and marshy vallies they are very numerous. The females come in season about the close of winter, and bring forth in April, generally having fix or feven in a litter; they may probably bring forth more often than once a year, but of this we have no certain knowledge.

Their

Their flesh is not absolutely bad, being eaten by the peasants in catholic countries during lent, as well as that of the otter. This species is found throughout Europe, the very extremities of the north excepted. If Bellon may be believed, they inhabit the banks of the Nile, but the figure he gives of it has so little resemblance to our water rat, that there is great reason to suppose them different animals.

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THE Campagnol, or short-tailed field-mouse, is still more common and generally disfused than the long-tailed kind. The latter generally prefers elevated grounds, while the former is sound in woods, meadows, and even gardens. It is remarkable for the bigness of its head and shortness of its tail, which is not above an inch long. It digs holes in the earth, where it amasses corn, nuts, and acorns; the former of which it appears to prefer to every kind of food. About the month of July, when the

the corn begins to ripen they collect together from all quarters, and frequently do great damage by cutting the stalks to come at the ears: they also follow the reapers and pick up all the grain that falls. When the gleanings are exhausted, they resort to the new-sown lands, and not unoften destroy the hopes of the succeeding year. At the end of autumn, and in winter, most of them withdraw into the woods, where they feed upon beech-mast, nuts, and acorns. Some years they appear in fuch great numbers that they would destroy every thing were they to continue for any length of time, but for want of food they eat each other, and are also destroyed by the long-tailed field mouse, the fox, wild cat, martin, and weafel. In its internal parts, this animal more refembles the water-rat than any other; but externally it differs from him in many effential characters: First, in fize, the campagnol not being more than three inches long, whereas the water rat is feven; fecondly, by the dimensions of its head and body, those of the former being thicker in proportion than those of the latter; thirdly, by the length of the tail, that of the campagnol exceeds not one third, while that of the water rat is nearly two thirds the length of its body; and lastly, by appetite and inclinations, fince

the former neither feeds upon fish nor plunges into the water, but lives upon grain, acorns, and bulbous roots. Their holes resemble those of the long-tailed field mouse and are often divided into two apartments, though they are less spacious and are not dug so deep. Several of them sometimes live together. When the females are about to bring forth they collect grass to make beds for their young. They produce in spring and summer, and generally from five to eight at a time.

#### THE GUINEA PIG.

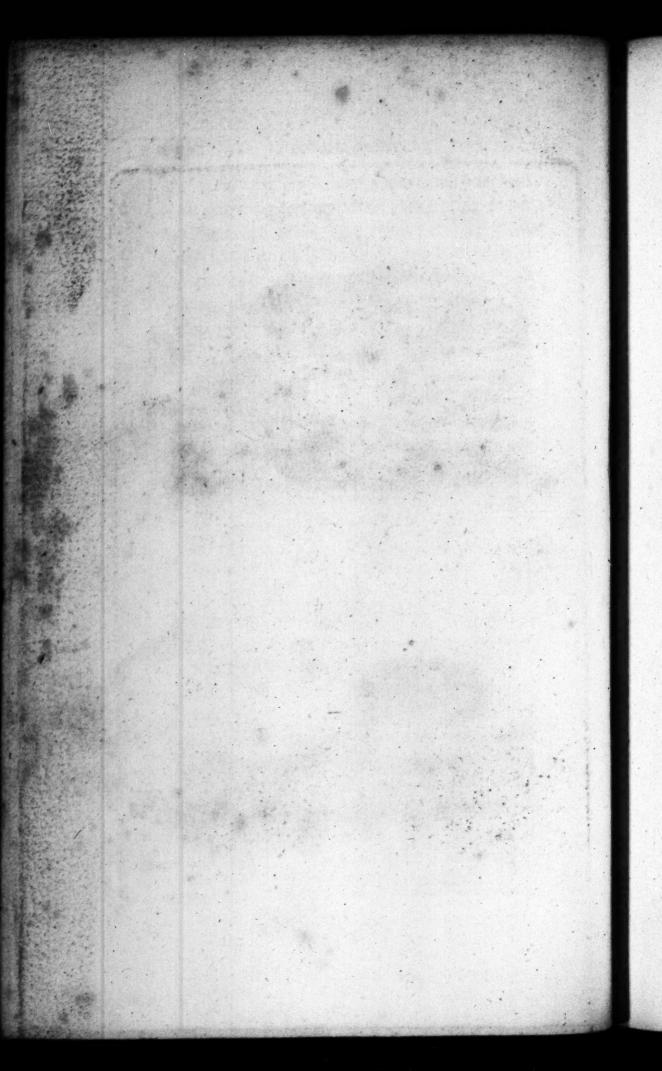
to continue for again to direct to the former or

THIS animal (fig. 79.) though a native of Brasil and Guinea, lives and breeds in temperate, and even in cold countries, provided it is taken care of and sheltered from the inclemency of the weather. The Guinea-pig is frequently reared in France, and though very prolific is far from being numerous, the attention they require being poorly rewarded by any suture profits derived



FIG: 79 Guinea - Pig





derived from them. Their skin is of little or no value, and their slesh, though people do eat it, is very indifferent; a circumstance which might, in some measure, be removed, by rearing them in warrens, where they might have air, space to range in, and an agreeable choice of herbs. Those kept in houses have the same kind of bad taste with the house rabbit, and those kept in gardens during summer their slesh is less disagreeable, but still insipid.

These animals are of so hot a nature that they begin to copulate so early as at five or fix weeks old; their growth, however, is not completed before the end of eight or nine months, though their increase is in bulk and fat only after the fixth, by which time all their folid parts are completely developed. The females go with young three weeks, and they have been known to bring forth at the age of two months. The first litter does not consist of more than four or five, the fecond five or fix, and afterwards they will sometimes have eleven or twelve. She does not fuckle her young more than twelve days, and when the male returns to her, which he never fails to do three weeks after she has littered, she drives them from her, and if they perfift in following he often kills them. Thus these animals bring Gg forth VOL. VI.

forth at least every two months; and as their young produce in the same period their multiplication is aftonishing. In one year 1000 might be obtained from a fingle couple; but their confequent increase is checked by the various means of their destruction; they perish from cold and wet; without refistance they fuffer themselves to be devoured by the cats; the females, not having had time to form an attachment to their young, fee them deftroyed without attempting to protect them. They feem to have no diffinct fentiment but that of love, and when disputing for a particular female they will shew themselves sufceptible of anger, fight bitterly, and are sometimes killed in the conflict before they will yield. They pass their lives in eating, sleeping, and love: their fleep is short, but frequent; they eat every hour, night and day, and indulge in their amours as often as they eat; they emit urine every minute, although they scarcely ever drink. They feed on all forts of herbs, especially parsley, which they prefer to grain or bread; of apples, and other fruits, they are also very fond. Like the rabbit they eat little at a time, but precipitantly, and very often. They grunt like a young pig; make a chirping noise when pleased with their females, and have a harp

sharp loud cry when hurt or irritated. They are very delicate, and so chilly that it is difficult to preserve them through the winter, therefore they must be kept in a place which is thoroughly warm and dry. When they seel cold they affemble and press close together, and in which situation they are sometimes sound dead. They are naturally mild and tame, seem equally incapable of doing harm or good, and never form any attachments. Mild by temperament, docile by weakness, almost insensible to every thing round them, they have the appearance of being so many living machines, merely possessed of abilities to propagate a species.

#### THE HEDGE-HOG.

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THE Hedge-hog (fig. 80) possesses the power to defend itself without fighting, and to annoy without making an attack. Having little strength, and no agility to escape his foes, he has received from Nature a prickly armour, with the power of rolling himself up like a ball, and presenting from every part of his G g 2 body

body a poignant weapon of defence. His fears prove an additional fecurity, for the smell of his urine, which he throws out when attacked, is always sufficient to disgust his enemy. Thus dogs content themselves with barking at the hedge-hog, and never shew an inclination to seize it. The fox, however, has the address to master it, by contriving to wound its feets from which the blood runs into its mouth, but from the weasel, martin, polecat, ferret, or birds of prey, it has nothing to dread.

The females, as well as males, are covered with prickles, and the under parts of their bodies only are covered with hair; wherefore these arms, so useful to them against their enemies, are highly inconvenient in their amours, as they cannot unite, like other quadrupeds, but face to face, either upright or lying. They come in feafon in fpring, and bring forth at the beginning of fummer. I have frequently had the mother and her young brought me in the month of June; their litters generally confift of from three to five; they are white at first, and only the marks of their fpines and prickles appear. Defirous to rear some of them, I put a dam and her little family into a tub, with plenty of meat, bread, bran, and fruit, but, instead of suckling, she devoured

devotired them one after another. I was furprifed that fo indolent an animal should discover fuch marks of impatience at confinement. An hedge-hog, which had one day got into the kitchen, took fome meat out of a small kettle; and then defiled it with its excrement. I kept males and females in the fame apartments, but though they lived they never coupled. I put feveral of them in my garden, where they did fo little damage that it was hardly perceivable they were there; they lived upon the fallen fruits, and dug the earth to a small depth with their fnouts; they eat caterpillars, worms, beetles, and fome roots; and they are also very fond of flesh, which they devour either raw or roafted a stade stadeus acrob of

In the country they are commonly found in the woods, under the trunks of old trees, in the clefts of rocks, and in vineyards. I do not believe they climb trees, as has been afferted, or make use of their prickles to carry off the fruit; they seize with the mouth every thing they eat, and though they are very numerous in our forests I never heard of one being seen upon a tree, but are always found in hollow places, or under moss. They remain inactive all day, and only go about during the night. They seldom approach human habitations; they

they prefer dry and elevated grounds, yet are fometimes found in meadows. When touched they do not offer to escape or defend themselves, either with their feet or teeth, but roll themselves up, and are only to be made to extend by plunging them into cold water; they sleep during the winter, and, therefore, if, as it is faid, they amass provisions in summer, they would be entirely useless. They at no time eat much, and can exist a long time without any food. Like all other animals who fleep in winter, their blood is cold; their flesh is not good to eat, nor is their skin, which was formerly employed in the preparation of hemp, converted to any ule of fields, which they de

According to some authors there are two species of the hedge-hog, one with a snout like a hog, and the other with a short muzzle like a dog; but I know of but one, and of which there are even no varieties in our climates. This animal is pretty generally diffused; they are in every part of Europe, Lapland, Norway, and the other very cold countries excepted Flacourt says there are hedge-hogs at Madagascar, where they are called Sora. The hedge-hog of Siam, mentioned by Father Tachard, seems to be another animal. Those of America and Siberia evidently approach the

the nearest to our common hedge-hogs, and lastly, the hedge-hog of Malacca seems to be more of the porcupine than the hedge-hog.

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# THE SHREW MOUSE.

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THE Shrew Mouse (fig. 81.) seems to form a shade in the order of animals, and to fill up the interval between the rat and the mole, which though they resemble each other in size, differ greatly in form, and are a totally diffinct species. The shrew is smaller than the common moufe, refembles the mole in its snout, which is longer than the jaw-bones; in its eyes, which, though larger than those of the mole, are in the fame manner concealed, and smaller than those of the mouse; in the number of its toes, having five on each foot, in its tail and legs, particularly the hind ones, which are shorter than those of the mouse; in its ears and laftly, in its teeth. This little creature has a strong smell, peculiar to itself, and so offen-

five

five, that cats, though they chace and kill, will not eat it. This noisome odour, and the aversion of the cats, most probably gave rise to the notion that the shrew mouse is a venomous animal, and that its bite is hurtful, particularly to horses; but the truth is, that it is neither venomous nor capable of biting, for it cannot open its mouth sufficiently witle to take in the double thickness of another animal's skin, which is absolutely necessary in order to bite. Besides the distemper among horses attributed to the shrew mouse, is a swelling proceeding from an internal cause, and therefore can have no relation to a bite.

The shrew mouse, especially in winter, fixes its residence in stables, hay-losts, or barns; it seeds on grain, insects, and putrid sless. It also resides in woods and fields, where it lives on grain; it sometimes conceals itself under moss, the trunks of trees, in holes abandoned by moles, or in holes of a smaller size, which it digs for itself with its claws and snout. The shrew produces as many young at a time as the common mouse, but not so frequently. Its cry is more sharp, but it is not near so nimble, and as it sees impersectly, and runs slowly, there is very little difficulty in taking it. Their usual colour is brown mixed with red, though

though some are ash coloured, and all of them are white under the belly. They are very common throughout Europe, but do not seem to exist in America. The animal of Brasil, which Margrave mentions as the shrew mouse, and describes with three black stripes upon the back, is larger, and appears to be of a different species.

### THE WATER SHREW MOUSE.

THIS animal, though a native of these climates, was unknown to any of our naturalists, 'till M. Daubenton first discovered and described it, as in the Memoirs de l'Academie in 1756. To the former animal we have only to add, that this is taken near the sources of sountains, as the sun rises and sits; that in the day it remains concealed in the clests of rocks, or in holes at the edges of rivulets; that it brings forth in spring, and has generally nine young ones at a time.

#### THE MOLE.

THE Mole, (fig. 82) without being blind, has eyes fo small, and so concealed, that it can make but little use of seeing. In recompence Nature has supplied it with an ample portion of the fixth fense. Of all animals the mole is the most profusely furnished with generic organs, and of course with the relative sen-The fenses of hearing and feeling it enjoys in an eminent degree; a skin as soft as velvet, and its little paws, with five claws, are very different from other quadrupeds, and nearly resemble the hand of a human being; they have great strength in proportion to the fize of their bodies, and fo ftrong and reciprocal an attachment fubfifts between the male and female, that they feem to have a dread of, and difgust to, all other society. enjoy the mild habitudes of folitude and repole; the art of securing themselves, of instantaneously forming an asylum, of extending it, and of obtaining a plentiful subsistence without a necessity for relinquishing it. Such are

the dispositions, manners and talents of this animal, and they doubtless are preserable to qualities more brilliant, which are perhaps more incompatible with happiness than even an absolute deprivation of fight.

The mole shuts up the entrance to its retreat, which it feldom leaves, unless forced by heavy rains, or it becomes demolished by man. It prefers cultivated grounds, and is never to be found in those which are muddy, hard, or stony; and delights in a foft foil, well supplied with esculent roots, insects and worms, of which its principal nourishment consists. As they seldom come above ground, they have but few enemies and eafily elude the pursuit of animals stronger and swifter than themselves. Their greatest calamity is an inundation, and when that hap. pens they are feen swimming in great numbers, and using every effort to save themselves by reaching the higher grounds, but the greatest part of them perish, as well as their young who remain in the holes. Were it not for fuch accidents, from their great fecundity, they would be extremely incommodious to farmers. They couple at the beginning of spring, and their young ones are found as early as May. They generally have four or five at a time, and it is easy to distinguish the mole-hill under which Hh2

which they have littered, as they are more elevated, and made with greater art than the rest. I am inclined to think they bring forth more than once a year; this however is certain that young ones are met with from April to August, which, however, may be owing to some coupling later in the year than others.

The hole in which they deposit their young is formed with fingular skill and deserves a particular description. They begin by raising the earth and forming a tolerable spacious apartment, leaving divisions or pillars at certain diftances to prevent the roof from falling, all round which they beat and press the earth, interweave it with roots and plants, and render it so firm that the water cannot penetrate it; the apartment in the hillock is above the level of the ground, and therefore less subject to accidents from flight inundations; under this they form another kind of hill, upon the top of which they lay grass and leaves as a bed for their young. Here they lay secure from wet, and the female proceeds to make their retreat equally free from danger; for all round this internal hillock she pierces holes still deeper, which part from the middle apartment like rays from a centre, and extend about fifteen feet in every direction; into these the mother makes her **fubterraneous** 

fubterraneous excursions, and from them supplies her young with roots and insects; but they contribute still more to the general safety, for as the mole is very quick of hearing, the instant she finds her habitation attacked she takes to one of the burrows, and unless the earth be dug away by several men at once, she and her young always make good their retreat.

Some authors have afferted that the mole and badger fleep the whole winter, but that this is not true we have already observed, with respect to the badger, from the traces which he leaves upon the snow; and so far is the mole from fleeping the whole winter that the continues to raise the earth then as well as in fummer; and it is almost proverbial with the pealantry of France, that "when the mole is at work a thaw is at hand." They are, indeed, fond of warm places, and the gardeners often catch them round their beds in the months of December, January, and February. This animal is never to be met with in barren deferts or cold climates, where the ground is frozen for the greatest part of the year. The Siberian mole, with green and yellow hair, is of a different species from our mole, which abounds only from Sweden to Barbary; at least from the filence of travellers we may prefume it is

not an inhabitant of hot climates. The moles of America, particularly the red ones, are also different. The Virginian mole, however, is not unlike ours, except in the colour of the hair, which is mixed with a deep purple. In our common moles there are only two or three varieties; some are more less brown or black, and some sew we have seen entirely white. Seba mentions, and gives a figure of a mole with black and white spots\*, which he found in East Friesland, and which was rather larger than our moles.

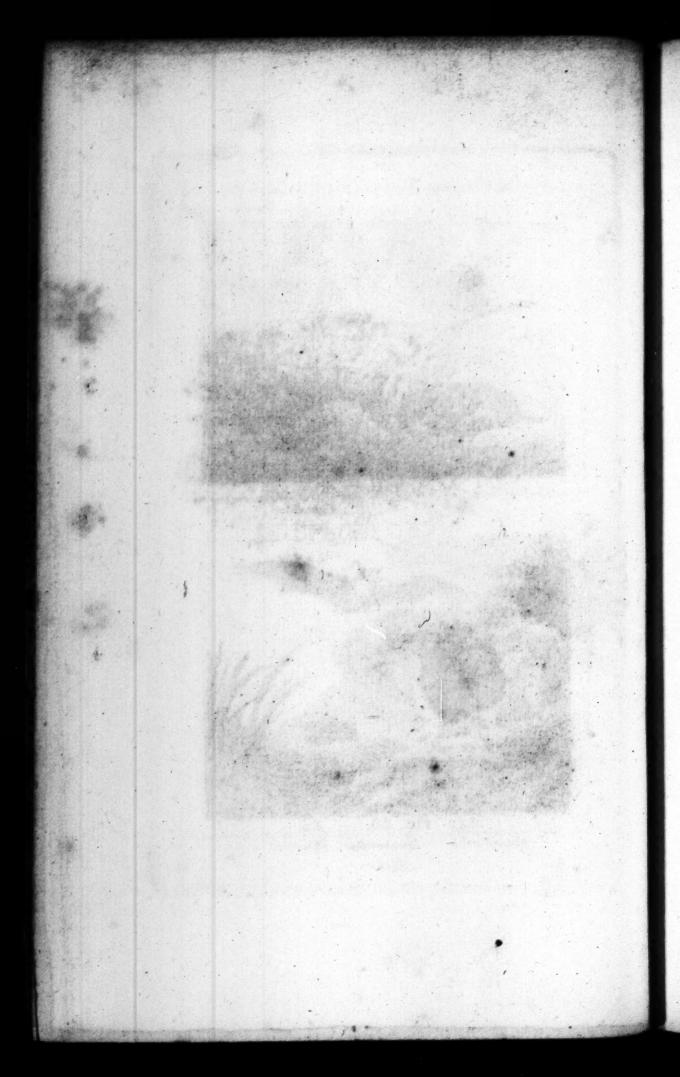
I received from M. Sonnerat the skin of what he calls the Mole of the Cape of Good Hope (fig. 83.) which bears a near resemblance to the common moles, excepting the fore-seet and the head, which is much larger, and has a snout somewhat like the Guinea Pig. Its hair is dark brown, with yellow tips, which gives it a bright shade, and its tail is covered with long hairs of a yellowish white. Upon the whole, I am inclined to think that it cannot be considered as a simple variety, but that it is a different species.

<sup>\*</sup> This mole, fays he, was found on the highway. It is larger than the common mole, from which it differs in no respect but the colour of the skin, which is diversified on the back and belly with black and white spots, and these intermixed with a few grey hairs as fine as silk. The snout of this animal is long, and covered with hair of a considerable length; and its eyes are so small that it is difficult to distinguish them.





Bats.



District Manufactured birds and which it is in

#### THE BAT.

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THOUGH all beings are equally perfect in themselves, as coming from the hands of the Almighty Creator, yet, in their relation to man, fome appear more accomplished, and others more imperfect or deformed. The former are those whose figures are agreeable, and which we esteem complete, because all their parts are well connected, their members proportioned, and their functions easy and natural. The latter are those whose qualities are offenfive to us, whose nature deviates from other beings, and whose forms are different to those from which we drew our first sensations, and those ideas which serve to model our judgments. The head of a man upon the neck of an horse, its body covered with feathers, and terminated with the tail of a fish, represents not a picture of enormous deformity, but from being an affemblage of the most incongruous diversities of nature. An animal, like the bat, which is half

half quadruped and half bird, and which, in fact is neither the one nor the other, is a kind of monster, because it unites the attributes of two fuch different generaand resembles none of those models presented to us in the grand classes of Nature. It is an imperfect quadruped, and a still more imperfect bird; as a quadruped it should have four feet, and as a bird it should have feathers and wings. In the bat the forefeet are, properly, neither feet nor wings, though the animal uses them for the purpose of flying and moving along the ground; they are two shapeless extremities, of which the bones are of an enormous length, and connected by a membrane neither covered with feathers nor hair, they are a kind of small wings or winged paws, in which we only see one claw about an inch in length, and with which the other four, though very long, must act in conjunction, as they have no peculiar movements, no separate functions; they are a kind of hands ten times larger than the feet, and four times larger than the whole body of the animal; in a word, they are parts which have rather the appearance of caprice and accident, than a regular production. This membrane covers the arms, forms the wings, or hands, of the animal, is united to the skin of the body, and, at even

the same time envelopes not only its legs, but even its tail, which by this whimfical junction becomes, as it were, one of its toes. To these incongruities, these disproportions of the body and members may be added the still more strikeing deformities of the head. In some species the nose is hardly visible; the eyes are funk near the tip of the ear, and confounded with the cheeks; in others the ears are as long as the body, or else the face twisted into the form of an horse-shoe, and the nose covered with a kind of crust. Many of these animals have four fubstances from their heads, resembling ears, and of all of them the eyes are small, obscure, and covered; their nofes are ill-formed, and their mouths extend from ear to ear; they shun fociety and the light, inhabit dark places, which they quit only for nocturnal excursions, return before the break of day, and, in a manner, glue themselves against the walls. Their motion in the air is less a flight than an uncertain flutter, which they execute by struggles and in a very awkward manner; they raise themselves from the ground with difficulty, and never foar to a great height; their flight being far from either rapid or direct, but is performed by hafty vibrations in an oblique and winding direction; in their flight they, however, seize gnats moths VOL. VI.

moths, and other nocturnal infects. These they fwallow entire, and in their excrements we meet with the remains of wings and other dry parts which they were unable to digest.

Having one day descended into the grottoes of Arcy, I was surprised to find, upon a spot covered with alabafter, and in a place fo gloomy, a kind of earth fo very different; it confisted of blackish matter several feet in width and breadth, and composed almost entirely of the wings and legs of infects, as if immenfe numbers had collected there and perished together. This heap, however, was nothing more than the dung of bats, amaffed, probably, from their having made that their favorite refidence for many years; for in the whole extent of the grottoes, which is more than the eighth of a league, I saw no other similar mass; I therefore concluded they had fixed upon this spot, because a small gloomy light reached it from the top, and that they had not proceeded farther, left they should have been too much enveloped in obscurity.

Bats have nothing in common with birds, except the faculty of flying, and, therefore, must be classed among quadrupeds; but as the ability to fly implies a great degree of force in the superior and anterior parts of the body, the pectoral

pectoral muscles of the bat are more strong and fleshy than those of any other quadruped, a circumstance in which they have some resemblance to birds; in every other respect their conformation, both external and internal is different. The lungs, heart, organs of generation, and all the other viscera, except the prominent sexual distinction, which is similar to that of a man or monkey. Like quadrupeds the bats are vivaparous, and have teeth and nipples. It has been affirmed that they bring forth only two at a time, that they suckle their young, and even carry them when they fly. It is in fummer they couple and bring forth, for during winter they are in a ftate of torpor; some cover themselves with their wings as with a cloak, and fuspend themselves by their hind legs in fubterraneous caverns; others cling to walls, or conceal themselves in holes. When they retire they do it in numbers, and collect together to defend each other from the cold; and they pass the whole winter, from the end of autumn to the fpring, without either food or motion. They can support hunger better than cold; and though they can subsist many days without food, they are nevertheless carnivorous, for when opportunity ferves, they will Ii 2

devour meat of all kinds, whether raw or roafted, fresh or corrupted.

There were but two species of bats described as natives of our climate, until M. Daubenton discovered fix others equally common and abundant, which renders it aftonishing they should have remained fo long unnoticed. The whole of them are widely different, and never dwell together. The first is the common bat, (fig. 86) which we have already described. The next is the long-eared, (fig. 84) which is perhaps more numerous than the common bat; its body is more diminutive, its wings is shorter, its fnout smaller and more pointed, and its ears large beyond all proportion. The third species I call the noctule, from the Italian word notula, was not known, though very common in France, and more frequently met with than the two preceding. It is found under the roofs of houses, castles, and churches, and in hollow trees; it is almost as large as the common bat, its ears are broad and short, its hair of a reddish cast, and its voice sharp and piercing. The fourth is diffinguished by the name of the crotine; it is smaller than the common bat or the noctule, and nearly the fize of the longeared; its ears, however, are shap and pointed, its wings are black, and its body of a deep brown.

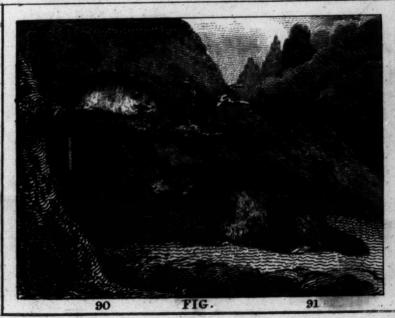
brown. The fifth I call the Pipistrelles, (fig. 85) from the Italian word pipiftrello which fignifies bat. Of all bats this is the smallest and least ugly, though the upper lip is swelled, its eyes fmall and hollow, and its forehead covered with hair. The fixth is named the Barbaftelle. (fig. 89) from barbaftello another Italian word, fignifying a bat. This is nearly of the same fize as the long-eared; its ears are as broad but not so long. The name barbastelle is the more applicable to it, as it feems to have whifkers, which nevertheless are only protuberances over the lips; its fnout is short, nose flat, and its eyes close to its ears. The feventh, and last, is distinguished as the Horseshoe bat, (fig. 88). The face of this animal is fingularly deformed, of which the most apparent feature is a membrane in the form of an horse-shoe round the nose and upper lip; this species is very common in France, among the walls and in the vaults of old ruinous castles, and of which there are large and fmall, but in form, and every other particular, they are fimilar. As I have not met with any of the intermediate fizes, I cannot determine whether this difference is produced by age, or a permanent variety in the same species.

#### THE LOIR.

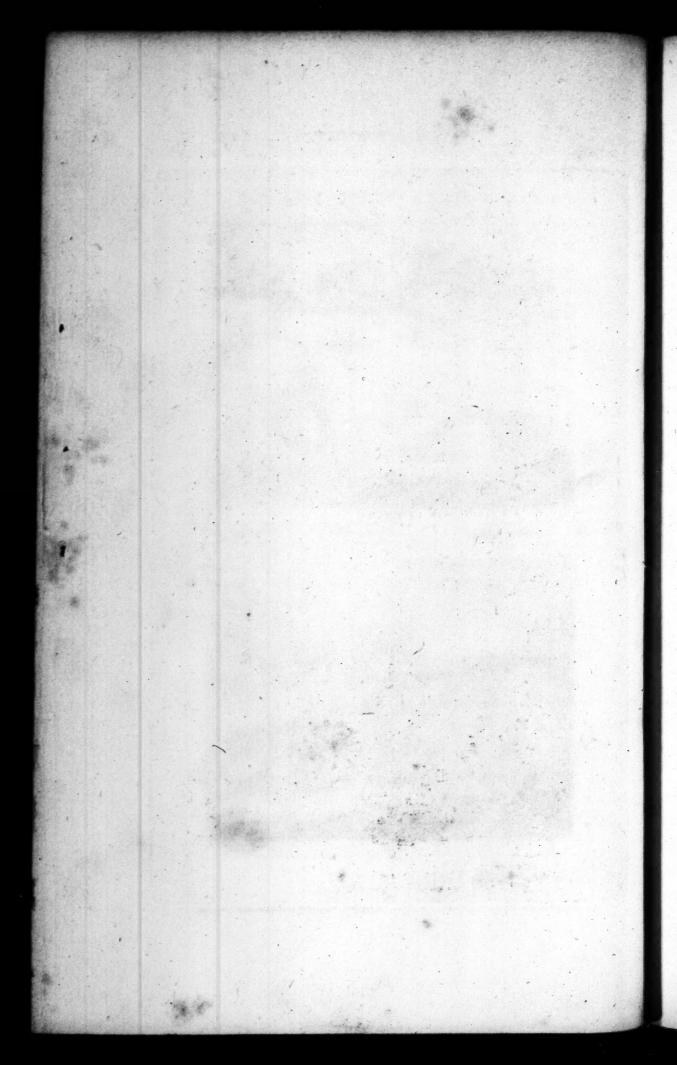
OF the Loir, or Great Dormouse, or as some naturalists have termed it the Fat Squirrel, there are three species, which, like the marmot, fleep during the winter; namely, the Loir, the Lerot, and the Muscardin, or common These three species have been Dormouse. confounded together although they are very different, and eafily diffinguished. The Loir is near of the fize of the fquirrel, and like that animal, has its tail covered with long hair; the lerot is not so large as a rat, has very short hair on its tail, except at the extremity, where there is a tuft of long hair; the dormouse is not bigger than the common mouse, its tail is covered with a longer hair than the lerot's, but shorter than the loir's, and it also has a tuft at the extremity. The loir differs from the other two, by having black spots about its eyes, and the dormouse by having white hair upon its back.



87 FIG. 89 88
Scrotine Bat Barbastelle D° Horseshoe D°



Dormouse Alpine Marmot Published by J S. Barr Fds. 18.17.92



back. They are all white or whitish under the neck and belly; the white of the lerot is beautiful, that of the loir more dark, and that of the dormouse has a yellow hue in all the inferior parts.

There is no propriety in the affertion that these animals sleep during winter, for they are not in a state of natural sleep, but in a torpor produced by the coldness of the blood, by which they lose the use of their senses and members. Their internal heat does not exceed the temperature of the air. When the heat of the air is ten degrees above the freezing point, their heat is exactly the same. The ball of a small thermometer I have plunged into the bodies of feveral living lerots, and always found the heat of their bodies was nearly equal to the temperature of the air; and fometimes when applied to the very heart, I have observed the thermometer fall from half a degree to a whole one, the temperature of the air being at eleven. Now it is well known that the internal heat of man, and of the generality of quadrupeds, at all times exceeds thirty, and therefore there is little reason to be surprised that these animals, whose heat is so small, should become torpid, when their little internal heat ceases to be affisted by the external heat of the air; a circumstance

cumstance that naturally happens when the thermometer is not above ten or eleven degrees above the point of congelation. This is the real cause of the torpor of these animals, a cause which has been overlooked, although it extends to all animals which sleep during winter. Alike are its effects upon these animals, the hedge-hog and bats, though I have never had the opportunity of trying them upon the marmot, I am persuaded its blood is not less cold, since like them it is subject to a torpor during winter.

The torpor continues as long as the cause which produced it, and ceases with the cold. A few degrees of heat above ten or eleven is fufficient to re-animate them, and if kept in a warm place during winter they do not become torpid, but go about and eat and sleep, from time to time, like other animals. When they feel the cold they crowd close together, and roll themselves up like balls, in order to present a fmaller furface to the air, and to preserve some warmth. It is thus they are found during winter in hollow trees, and in holes of walls exposed to the fouth: in these they lie without motion, on moss and leaves, and when taken, if toffed or rolled about they never flir, or thew any figns of life; it is by a mild and gradual on Ame

gradual heat alone they are to be recovered, for if carried suddenly near a fire they perish. Though in this flate they are without motion, though their eyes are shut, and they feem to be deprived of all their fenses, yet they feel pain when it is very acute; this they testify by a contraction, and a little hollow cry, which they will repeat feveral times; hence it is plain the internal fenfibility must subfist, as well as the action of the heart and lungs, yet it is to be prefumed that these vital motions act not with the same force and power while in the torpid as in the usual state. The circulation, probably, is not performed then but in the larger veffels; the respiration is flow and feeble, the fecretions are very feanty, and perspiration must be nearly annihilated, fince they could not pass several months without eating were they to lose as much of their substance by perspiration as they do when they have an opportunity of repairing it by the taking of sustenance; they do lose fome part, however, fince in very long winters they die in their holes. Perhaps, indeed, it is not the duration but the feverity of the cold that cuts them off, as they foon die if exposed to an intense frost. What induces me to believe that it is not from waste of substance they perish in long winters, is their being very VOL. VI. Kk fat fat in autumn, and equally so on their reviving in spring; this abundance of fat being an internal substance, sufficient to supply what they lose by perspiration. Besides, as cold is the sole cause of their torpor, and they never fall into that state but when the temperature of the air is below the tenth or eleventh degree, they often revive during the winter, for in that season there is frequently hours, and even days, in which the liquor will be sound at the twelsth, thirteenth, or sourteenth degree, and during this mild weather the dormice quit their holes in search of sood, or rather eat what they had amassed the preceding autumn.

Aristotle asserted, and he has been followed by succeeding naturalists, that dormice pass the whole winter without eating, and that during this period of abstinence they become very fat, being more nourished by sleep alone than other animals by food. This is both untrue and impossible. In its torpid state, which lasts four or five months, it could only fatten by the air it breathes; allowing part of this air to be converted into nourishment, could so considerable an increase result from it? Would it be sufficient to recompence the waste by perspiration? Aristotle might have been led into this error by the winters in Greece being very mild,

mild, where the dormice do not fleep continually, but taking nourishment every time they were revived by the warmth they might become fat, though in a torpid state. The truth is they are always fat, especially in autumn and summer. Their flesh is not unlike that of the guinea-pig. They were reckoned delicacies by the Romans, who reared great numbers of them. Varro describes the method of making warrens for them, as does Appicius of dreffing them in the best manner. Their instructions, however, have been neglected, either from a difgust to a loir, from his near resemblance to a rat, and from his flesh being unpalatable. By pealants who had eaten them I have been told that it is hardly preferable to that of the water-rate of the fourt to which the lot water

The loir has a confiderable refemblance to the squirrel in its natural habits; it lives in forests, climbs up trees, and leaps from branch to branch, though not so nimbly as the latter, because his legs are not so long, and he is as remarkable for being fat as the other is for being slender. Nuts, and other wild fruits, compose the usual nourishment of both; the loir likewise eats small birds, which he takes in their nests. He does not, like the squirrel, nestle on the upper parts of trees, but makes a

bed of mols in the trunks of those which are hollow; he also shelters himself in the clefts of rocks, and always prefers dry places. He avoids moisture, drinks little, and varely defcends to the ground; but there is a material difference between him and the squirrel, as the latter is easily tamed, but the loir always remains wild. They couple about the end of fpring, and the females bring forth in fummer, generally producing four or five at a time. Their growth is speedily accomplished, and it is afferted that they do not live more than fix years. In Italy, where they still eat them, the inhabitants dig pits in the woods, which they line and cover with ftraw and moss; for these they choose a dry spot, sheltered by rocks and exposed to the south; to which the loirs resort in great numbers, and the people find them there in a torpid state, about the end of autumn, when they are fittest to eat. They are full of courage, and will defend their lives to the last extremity; their fore-teeth are very ftrong, and they bite violently; they have no fear of the weafel nor small birds of prey; they baffle the attempts of the fox, by mounting to the tops of the trees, nor have they any very formidable enemies but the martins and wild cais. nefile on the unper parts of the

This

This species is not very much diffused; it is not met with in the cold climates. fuch as Lapland and Sweden; at least the naturalifts of the north do not mention it; the species they describe being the muscardin, the smallest of the three; neither, I presume, are they to be met with in very hot climates, travellers being filent about them. There are few or none of them in open countries like England; they require a temperate climate. and the country covered with wood. We meet with them in Spain, France, Greece, Italy, Germany, and Switzerland, where they live in forests situated on rising grounds, and not on the tops of mountains, like the marmot, which, though subject to a torpor from the cold, feems to delight in frost and snow.

## THE LEROT.

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vives them; eight or ten of their are fornetimes found in one place, in a filte of ternor, all

THE loir lives in forests and seems to shun our habitations, but the Lerot, (called sometimes the Middle Dormouse at others the Garden Squirrel,) on the contrary, inhabits

our gardens and is fometimes to be found in our houses; this species is likewise more numerous and more generally diffused; and few indeed are the gardens which are not infested with them. They neftle in the holes of walls, climb up trees, choose the best fruits, and devour them as they begin to ripen. Peaches feem to be their favourite fruit, and whoever wishes to preserve them, must take pains to destroy the lerot. They likewise climb up pear, plumb, and apricot trees, and in a fcarcity of fruits, they eat almonds, nuts, and even leguminous plants. These they carry off in great quantities to their holes, which they dig in the earth, in well cultivated lands, where they make themselves beds of herbs, moss and leaves. The cold stupisies, and the heat revives them; eight or ten of them are fometimes found in one place, in a state of torpor, all huddled together, and rolled up in the midft of their hoard of provisions. They couple in foring and bring forth in fummer. They commonly have five or fix young at a time; they are very quick of growth, but do not engender till the second year; their slesh is not eatable like that of the loir; they have the same difagreeable smell as the house rat, whereas the loir has no bad smell, nor do they ever become

fo fat as the latter. This animal is found in all the temperate climates of Europe, and even in Poland and Prussia, but they do not appear to exist in Sweden and the more northern countries.

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OF all the species of the rat, the Dormouse (fig. 90) is the least ugly. It has brilliant eyes, and a full tail, which is rather white than red. It never lives in houses, and seldom in gardens, but like the loir, chiefly frequents the woods. and shelters itself in the hollows of old trees. This species is by no means so numerous as that of the lerot. The dormice are always found alone in their feveral holes, and I had much difficulty to procure a few of them; they, however, feem to be pretty common in Italy, and not unknown in the northern climates. fince they are comprised by Linnæus in his lift of Swedish animals; but they do not appear to exist in England, for Mr. Ray in his Synopsis, who had feen it in Italy, fays the small dormoufe found

found in England is not red upon the back like the Italian muscardin, and that it probably belongs to a different species. In France it is the same as in Italy, and is justly described by Aldrovandus in his History of Quadrupeds: but he adds that there are two species in Italy, one of which is scarce, and has the smell of musk, the other more general without any particular odour, and that at Bologna they are both called muscardino from their resemblance in figure and size. Of these two species we only know the latter, as the dormice of France have no smell either good or bad. Its slesh, however, is unsit to eat and it never becomes so fat as the loir.

The dormouse becomes torpid with cold and revives in mild weather, and like the loir and lerot hoards up nuts and other dry fruits. It forms its nest upon trees, like the squirrel, though generally lower among the branches of nut-trees, and underwood; the nest is made of herbs interwove, is about six inches in diameter and is open only at the top. Many countrymen have assured me that they have found the nests of dormice in coppices and in hedges, that they were surrounded with leaves and moss, and that each nest contained three or four young ones. So soon as they grow up they quit their nests,

nefts, shelter themselves in the hollows or under trunks of trees, where they repose, lay up their provisions, and sleep through winter.

#### THE SURMULOT.

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THIS species of rat has been known but for a few years, and is not mentioned by any naturalist except M. Brisson, who calls it the Rat of the Woods, but as it bears a greater resemblance to the field-mouse, in colour and habitudes, than to the rat, I have termed it the Surmulot, or large Field-moufe, This animal is more ftrong and mischievous than the rat; it has reddish hair, long naked tail, the backbone is arched like that of a squirrel, its body is much thicker, and it has whiskers like a cat. It is but a few years fince this species has been spread in the neighbourhood of Paris; from whence they came is not known, but they have multiplied prodigiously, which is not wonderful when it is considered that they produce from twelve VOL. VI. LI

twelve to nineteen young ones at a time. They were first discovered at Chantilly, Marly, and Verfailles. From M. le Roi I received a great number of them both alive and dead, and he also favoured me by communicating the remarks he had made upon this new species. The males are larger, stronger, and more mischievous than the females. When purfued, or endeavoured to be taken, they turn again and bite the flick or hand which touches them: their bite is sharp and dangerous, for it is immediately followed by a confiderable swelling, and the wound, though small, does not soon heal. They bring forth three times in a year, fo that two individuals may produce 36 in twelve months. Some of the females which I received were with young, and as I kept them in cages, two or three days before she brought forth I observed them busily gnawing the wood of their cages, and putting the pieces into a kind of order, made beds for their little ones.

The furmulot, in some of its habits, resembles the water-rat. Though they take up
their residences any where they seem to prefer
being in the banks by the water; the dogs
also chace them with the same surious eagerness as they do the water-rat. When pursued,
and they can equally take to the water, or

fhelter.

shelter themselves in a thorny thicket, they prefer the former, plunge in without dread, and fwim with great facility. This particularly happens when they cannot regain their burrows, for, like the field-mouse, they dig holes in the earth, or occupy those made by rabbits. They may also be taken by means of ferrets, who pursue them into their holes with the fame ardour as they do the rabbit. These animals pass the summer in the country; they live principally upon fruits or grain, yet are carnivorous, devouring young hares, rabbits, partridges, and other birds, and when they get into a hen-rooft they destroy, like the polecat, more than they can eat. About November the females and the young ones quit the fields, and proceed in troops to barns, where they commit infinite havock, by destroying the straw, confuming the grain, and infecting every thing with their ordure. The old males remain in the fields, each in his respective hole, where they accumulate acorns, beech-maft, &c. filling it to the very edge, and remaining themselves at the bottom. They do not become torpid in the winter, like the dormouse, but come out of their holes every fine day. Those which reside in barns drive away all the L12 mice

mice and rats; and it has even been remarked, that the common rats are less frequent in the environs of Paris fince the furmulat became so numerous.

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# THE ALPINE MARMOT.

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OF all modern writers Gesner has done most to enlarge our knowledge in Natural Hiftory. Aldrovandus is little more than his commentator, and those of less repute are his mere copyifts; we shall not, therefore, hefitate to follow him in treating of the Marmot, (fig. 91) which are natives of his own country (Switzerland) and of which he must have been better informed than those who may have accidentally kept a few in their houses. And as his remarks perfectly coincide with those obfervations we had an opportunity to make, we can have no reason to doubt but that what he farther relates is equally to be depended upon. The marmot, when taken young, is eafily tamed.

tamed, and to be nearly as much so as our domeftic animals. It is foon learnt to perform feats with a flick, to dance, and to readily obey the voice of its master. Like the cat it has an antipathy to dogs; when it has become familiar in the house, and finds itself protected by its mafter, it will attack the largest dogs, and fasten on them with his teeth. It is not quite fo large as a hare, but more flout, and has great strength joined to peculiar agility. He has four strong teeth in the front, with which he bites terribly; but unless provoked he neither attacks dogs nor men; yet if care is not taken he will gnaw furniture, and even make holes through wooden partitions. As his thighs are fhort, and his toes formed like the bear, he often fits erect, and walks with ease upon his hind feet; he puts food to his mouth with the fore paws, and eats like a fquirrel. He runs much fwifter up hill than on a plain; climbs trees, and mounts the clefts of rocks, or contiguous walls, with great facility; so much so that it is faid the Savoyards, who are the general chimney-sweepers of Paris, learned from the marmot their trade. They eat indifcriminately whatever is given them, whether flesh, bread, fruit, herbs, roots, pulse, or intects, but of milk and butter they are particularly fond;

and, though less inclined to theft than the cat, they industriously endeavour to get into a dairy, where they will lap great quantities of milk, purring all the while like a cat when she is pleased. Milk, indeed, is the only liquid for which they shew any inclination, as they seldom drink water, and refuse wine.

There feems to be a combination of the bear and the rat in the form of the marmot, vet it is not the arctomys, or rat-bear of the ancients, as Perrault, and feveral others, have imagined. Its nose, lips, and form of the head, are like those of the hare; it has the hair and claws of the badger, the teeth of the beaver, the whiskers of the cat, the eyes of the loir, the legs of a bear, with a tufted tail and short ears. The hair on its back is a reddish brown, more or less dark, and very harsh, that on the belly is reddish, and more soft. Its voice resembles that of a young dog when played with or carefled, but when irritated or frightened it raises a loud and shrill cry. It is a very clean animal, and retires, like the cat, upon necessary occasions; but, like the rat, it has a very strong disagreeable smell, especially in the summer. In autumn it is loaded with fat, though all parts of the body are never equally fo. The back and reins are covered

with

with fat, which is firm and folid; therefore the marmot would make very good eating, if it did not retain a disagreeable smell, which would require the strongest seasoning to conceal.

This animal, which delights in the regions of frost and snow, and which is only found on the highest mountains, is, of all others, most liable to be benumbed with the cold. About the end of September, or beginning of October, it retires to its hole, and appears not again till the beginning of April. His retreat is formed with precaution, and furnished with art. It is rather wider than long, and very deep, so that it will hold feveral of them without crowding, or injuring the air they breathe. Their feet and claws appear as if defigned for digging, and with which they remove the earth with great facility, throwing it behind them as they proceed. The form of their hole refembles the letter Y; the two branches having an opening which terminates in one wherein they reside. As the whole is made on the declivity of a mountain there is no part on a level but the innermost apartment. One branch of the Y slopes downward, and in which they void their excrements, and the other flopes upwards. and ferves them as a door to go in and out. The inner part is warmly lined with moss and

hav, of which they make an ample provision during fummer. It is even afferted that this is a public work, that some cut the finest grass, that others collect it, and that they take their turns in conveying it to the hole; upon this occasion, it is added, that one of them lies upon his back, permits the hay to be heaped upon his belly, keeps his legs extended, and in this manner the others drag him by the tail to their common retreat; and this practice is affigned as the reason for the hair being generally worn away from their backs. But it appears more probable, their being constantly employed in digging up the earth is the cause of that appearance. Be this as it may, certain it is they dwell together, and that they labour in common to make their habitations, in which they pass three-fourths of their lives; to it they retire in stormy or rainy weather, and at the approach of danger; they never go out but in the finest weather, and even then to no great distance: on these occasions one stands as centinel upon an elevated place, while the others are sporting in the fields, or cutting the grass for hay, and no sooner does he perceive a man, an eagle, a dog, &c. than he gives the alarm, by a kind of whiftle, and is himself the last to enter the cell.

They

They make no provision for winter, as if they forefaw that fuch a precaution would be useless; but when they perceive the first approaches of the feafon, in which they will be in a torpid state, they close up the entrance, of their dwelling, and which they effect with fo much folidity, that it is much more easy to dig up the earth in any other part. They are at this time very fat, and some of them will weigh twenty pounds; in this plight they remain for three months, after which they wafte by degrees, and are quite thin by the end of winter. When discovered in their retreats they are rolled up like balls, and covered with hay; in this state they may be taken away, and even killed, without shewing any sense of pain. The fattest are generally taken for food, and the young ones kept for taming. Like the dormouse they are revived by a gradual heat, and those kept warm in a house never become torpid, but are as lively in the winter as at any other We have already observed that the torpid state is occasioned by the congelation of the blood, and it is remarked in the Philofophical Transactions, No. 397, that when in this state of torpor, that the circulation of the blood is flow, the fecretions languid, and that the blood not being renewed by fresh acquisitions VOL. VI. Mm

of chyle, is then without ferum. Befides it is uncertain whether they remain for feven or eight months in a torpid flate as most authors pretend. Their burrows are deep, and they live together in great numbers; they therefore must retain their heat some time, and may then feed on the grass they have treasured up. M. Attman, in treating on the animals of Switzerland, fays, that the hunters let the marmots remain three weeks or a month unmolefted in their cells; that they never dig for them in mild weather, as without this precaution the animals awake, and penetrate deeper in the earth; but that on opening their cells in hard frosts they find them in so torpid a state, as to be carried off without difficulty; it may, therefore, be concluded that they, in all respects, refemble the dormice, and that if they are longer in a torpid state, it is because the winter is longer in the climates which they inhabit.

These animals produce but once a year, and rarely more than three or sour at a time. They grow very fast, their lives do not extend beyond nine or ten years, and their species is neither numerous nor much diffused. The Greeks knew it not, or at least have not mentioned it, Pliny is the first who takes notice of it among the Latins, under the name of mus Alpinus, or Alpine

rat; and, indeed, though there are many other species of rats in the Alps, there is none so remarkable as the marmot, or like it dwells upon the brow of the lostiest mountains; all the other species six their abode in the vallies, or at least on the sides of the lower hills or mountains; besides the marmot never descends to the lower grounds, but seems particularly attached to the Alpine heights, where it chooses such places as are exposed to the south or east in preference to the north or west. They are also sound on the Appenine and Pyrenean mountains, and on the highest German ones.

The Bobak of Poland, to which M. Brisson, and after him Mess. Arnault, of Nobleville, and Selerne, have given the name of Marmot differs from that animal in colour, and also in the number of toes, having five on the forefeet. From which we may conclude that the bobak, or Polish marmot, the mouax, or Canadian marmot, the cavia, or marmot of Bahama, and the cricet, or Strasburgh marmot, are different species from the marmot of the Alps.

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I HAVE received the drawing of a monax, or marmot of Canada, from Mr. Collinson, but which appears to differ very much from the Alpine marmot, its head is not of the same shape, and less covered with hair, as is also the tail, and which is considerably longer. The whistler mentioned by Baron Hontan, as found in Canada, is most probably of this species, as his description nearly answers to it. He says it is called whistler by the Canadians, because in fine weather they whistle at the mouth of their holes; which we have before remarked is done by our Alpine marmots, especially by the one appointed to stand as a guard.

An animal in Kamtschatka is called marmot by the Russian travellers; they say its skin is beautiful, and that at a distance it resembles the plumage of a bird; and add, that it uses its forefeet like a squirrel, and feeds on roots, berries, and cedar nuts; the latter however presumes some fome error, as the real cedar bears cones, and the other trees so called, berries.

There is another species which comes from the Cape of Good Hope; this was first spoken of by M. Allamand, but more fully described by M. Pallas and M. Volmaer, who had one of them alive at Amsterdam; he says it is known at the Cape by the name of the Rock Badger, merely because it lives under the earth and in rocks, but has no refemblance to that animal, and, as Kolbe justly remarks, it more refembles the marmot than the badger, we have called it the Marmot of the Cape. M. Vosmaer observes in his description of it, that it was about the fize of a rabbit, had a large belly, fine eyes, and black hair upon its eyebrows, above which it had a few long black hairs that turned towards the head, and long whilkers. Its colour was grey, or rather a vellowish brown intermixed with black hairs, much darker upon the head and back than upon the belly, which, as well as the breaft, was whitish, and it had a white stroke across the shoulders which ended at the top of the forelegs.

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#### THE BEAR.

THERE is no animal fo generally known, about which naturalists have differed so much as the Bear, their doubts and even contradictions, with respect to the nature and manners of this animal, feems to have arisen from their not diffinguishing the different species, and consequently ascribing to one the properties belonging to another. In the first place, the land-bear (fig. 92) must not be confounded with the seabear, or as it is commonly called the whitebear (fig. 93.) or bear of the frozen sea; these animals being very different both in the form of their bodies and natural dispositions. The land bears must also be distinguished into two species, the brown and the black, because having neither the same inclinations nor natural appetites, they cannot be confidered as varieties of the fame species. Besides, there are some landbears that are white, but which, although they resemble the sea-bear in colour, differ from it in

every



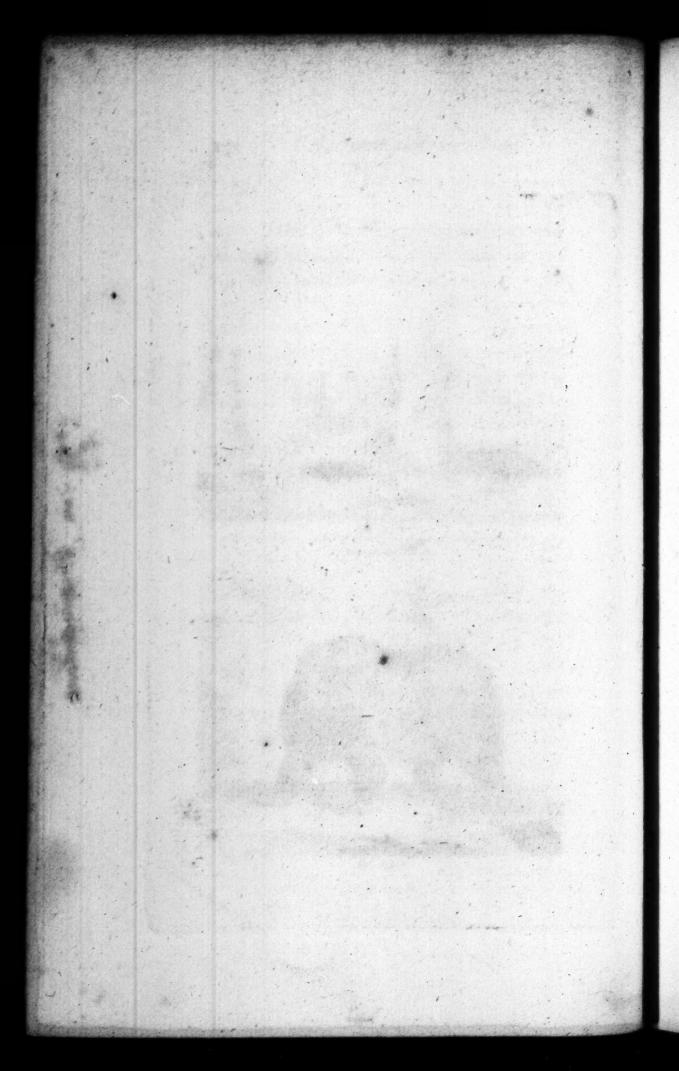
FIG. 93.

White Bear.



Brown Bear.

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every other particular. These white land-bears we meet with in Great Tartary, Muscovy, Lithuania, and other northern countries. It is not the rigour of the climate which renders them white during the winter, like the hares and ermines, for they are brought forth white and remain so all their lives. We ought, therefore, to consider them as a fourth species, if there were not also found bears with an intermixture of brown and white, which denotes an intermediate race between the white land-bear, and the brown or black, consequently the former is only a variety of one of those species.

We frequently meet with the brown-bear in the Alps, but the black-bear very rarely. But in the forests of the northern countries of Europe and America, the latter are very common. The brown one is both fierce and carnivorous, but the black-bear is only wild, and constantly refuses to eat sless. Of this we cannot give a more striking testimony than what M. du Pratz relates in his history of Louisiana. "The Bear, says he, (speaking of the black one) appears in Louisiana in winter, because the snows which cover the northern countries prevent him from procuring his usual food, which consists of roots, acorns, and vegetables in general; but milk and honey form his favourite repast,

and when he meets with those articles he will fooner die than relinquish them. In defiance of the prevailing notion that the bear is carnivorous, I maintain, with every person of this province, and the circumjacent countries, that he is not fo. These animals have never been known to devour men, nor even to eat butcher's meat, notwithstanding their multitude, and the excesses of hunger which they often suffer. While I refided at the Natches, one winter was fo fevere in the northern regions, that the bears flocked from them in great numbers; so great indeed that they starved each other, and were very meagre. In the night they were frequently feen roaming into houses and farm-yards, which were not properly shut, where they might have feasted upon meat, but they never touched it, nor devoured aught but such grain as they could pick up. If they had possessed a carnivorous disposition, it must have shewn itself upon such a preffing occasion. They never kill animals to devour them; and were they, in reality, carnivorous, they would not abandon their own fnowy regions, where they might find men and animals at discretion, to search for fruit and roots, an aliment which carnivorous tribes reject." M. du Pratz, adds in a note, that fince writing the above passage, he had learned, with certainty,

certainty, that, in the mountains of Savoy, there are bears of two forts, the one black, like those of Louisiana, not carnivorous, and the other red, which are as much so as wolves.

De Hontan remarks in his travels that the bears of Canada are very black, but by no means dangerous, and that they never attack the human species unless when fired at and wounded. In another place he adds that the reddish ones are exceedingly mischievous, and that they uniformly attack the huntimen, whereas the black ones fly from them. According to Wormius there are three kinds in Norway. The first (Bressdiar) is very large, not altogether black but rather brownish, is not destructive but lives folely on herbs and leaves of trees; the fecond (Ildgiersdiur) is smaller, blacker, and carnivorous, frequently attacking horses and other animals, especially in autumn; the third (Myrebiorn) is still smaller and mischievous, he feeds on ants and delights in demolishing their hillocks. It has been remarked, adds this author (but without any proof) that these three kinds copulate together and produce intermediate species; those which are carnivorous attack flocks like the wolf, killing the whole and eating only one or two; that they also eat wild fruits, and that when the fruit of VOL. VI. Nn the .

the service tree is in season, they are the most dangerous, because it sets their teeth on an edge and which can only be allayed by blood or greafe. But the generality of what Wormius relates on this head is highly equivocal, for we have no example of animals whose appetites are so different as the two first, the one living on herbs, and the other flesh and blood, copulating together and producing intermediate species. Befides he mentions the black bear as carnivorous, and the brown one as frugivorous which is inconfiftent with truth, and contradicted by facts. It is also to be observed that Father Rzaczynski, of Poland, and M. Klein, of Dantzick, in treating of the bears of their own countries, admit of but two species, the black and the brown or red; describing two kinds of the latter, the one large and the other small. They state the black bears to be rare, and the brown ones very common; that the black kind are the largest and feed on ants, and that the largest of the red or brown are most carnivorous and destructive. These testimonies, as well as those of Du Pratz and de la Hontan are contradictory to what Wormius affects. Indeed it feems to be a certain fact that the red or brown bears which are found not only in Savoy, but on the high mountains,

in the vast forests, and in almost all the deserts of the earth, devour live animals and even carcasses when in a putrid state. Black bears are feldom found in cold countries, but the red or brown ones we find in the cold, temperate. and even in the fouthern regions. In Greece they were common, and to heighten their shews the Romans introduced them from Lybia. They are now to be met with in China, Japan, Arabia, Egypt, and as far as the island of Java. Aristotle also speaks of white land bears, but considers this difference in colour as accidental, and originating from a defect in generation. Thus the bear is a refident in all defert, mountainous, and woody countries; but in open, populous, and cultivated regions he is a stranger. There are none in England or France, except possibly a few in the most unfrequented mountains of the latter,

The bear is not only a favage but a folitary animal; he takes refuge in the most unfrequented places, and dangerous precipices of uninhabited mountains; he chooses his den in the most gloomy parts of the forests, in a cavern hollowed out by time, or in the decayed trunk of some old tree. Thither he retires alone, and passes part of the winter without eating or ever stirring abroad. He is not,

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however, deprived of fensation, like the dormouse or marmot, but being exceedingly fat towards the end of autumn, the time he retires, he feems rather to fubfift on the exuberance of his former flesh, and does not quit his retreat until he is nearly wasted. We are told that the male quits his den towards the expiration of forty days, but that the female remains four months, by which time she has brought forth her young; that they should not only subsist but nourish their young, without taking any food for fuch a length of time I think highly improbable. I allow that when with young they are excessively fat, and also, that being covered with very thick hair, fleeping the greatest part of the time, and taking no exercife, they must lose little by perspiration. But, if it be true, that the males are impelled by hunger to quit their retreats at the end of forty days, it is not natural to imagine that the females should not feel greater want of food, after bringing forth and fuckling their young ones, unless we suppose that, like cats, they fometimes devour their offspring, of which, in my opinion, there is no probability. Befides, at present we only speak of the brown bear, the males of which do, in reality, devour their new-born cubs when they find them; but the females

females feem to love their offspring with a ferocious ardour. When they have brought forth, their fury is more violent and dangerous than that of the males. Nothing do they dread to combat, or expose themselves to, in defence of their young, which are not, as the ancients have faid, without form when born. but attain their full growth nearly as foon as other animals; before they leave the womb their formation is perfect, and if the fœtus, or young cub, seems, at first glance, to be unformed, it is merely because there is a want of proportion in the body and members of the grown bear; and that the fœtus, or new-born animal, is more disproportioned than the aged, is well known to be the case in all species.

The bears couple in autumn; and the female is faid to be more ardent than the male. It is pretended that she lies upon her back to receive him, that she folds him with her paws, and holds him a long time, but the fact is they copulate like other quadrupeds. Bears, while confined with a chain, have been seen to copulate and produce, but how long the semales go with young is not accurately known. Aristotle has limited it to 30 days, a fact which has never been contradicted, and which, as I cannot authenticate, I will neither affirm

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nor deny, but affign my reasons for thinking it doubtful; which are, first, because the bear is a large animal, and the larger the animal the longer time is required for its formation in the womb; fecondly, because the young bear is very flow of growth, follows the mother, and requires her fuccour for a year or two; thirdly, because the female produces only from one to four, and never more than five, a circumstance common to all large animals who produce but few and carry them long; fourthly, because the bear lives from 20 to 25 years, and the time of gestation, and that of growth, are usually proportioned to the duration of life. From these analogous principles I conclude that the bear carries her young feveral months. Be this as it may, the mother takes the greatest care of her offspring. She brings forth in winter, previous to which she provides a bed of hay and moss at the bottom of her den, and fuckles her young till they are able to follow her in the spring. The male and female reside not together, but have separate retreats, and that at a distance from each other. When they cannot find a cavern for a den they break and collect branches, which having placed they cover with herbs and leaves, so as to render it impenetrable by the rain,

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The voice of the bear is a kind of harsh deep murmur, which when enraged is heightened by the grinding of the teeth. Highly fufceptible of anger, which is always furious and often capricious. However mild, and even obedient, he may appear to his mafter, he ought to be treated with distrust and circumspection; nor upon any account should he be ftruck upon the nose, or on the parts of generation. He may be taught to stand on his hind legs, and to dance in a rude and awkward measure; but for this it is necessary he should be taken young, and held in constant restraint. An old bear is not to be tamed, nor even held in awe, and shews himself, if not intrepid, at least fearless of danger. The wild bear turns not out of his path, nor offers to thun the fight of man; and yet, it is faid, that by a certain whiftle he is so far surprised and confounded as to rife upon his hind feet. This is the time to shoot and endeavour to kill him. for when only wounded in an attack he darts with fury on his foe, and clasping him with his fore paws is fure to stifle or strangle him, unless immediately affisted.

Bears are chaced and taken in several manners; in Sweden, Norway, Poland, &c. the least dangerous method, it is said, is to intoxicate toxicate them, by pouring brandy, or other foirits, upon honey, which being their favorite food they fearch for in the hollows of trees. In Louisiana, and Canada, where the black bears are common, and where they refide in the decayed parts of old trees, they are taken by fetting fire to their retreats, which, as they climb trees with great ease, are sometimes 30 or 40 feet high. If this attack is made upon a female with her young she descends first, and is killed before the reaches the ground; as the cubs follow they are easily secured, by throwing a noose round their necks, and are carried home, either to rear, or kill for provisions. The flesh of the young is delicate and good, and that of the old one eatable; but as the latter is mixed with an oily fat, the paws alone, which are more firm, can be confidered as a dainty.

The hunting of the bear, without being dangerous, is highly profitable, when attended with success; of all coarse furs their skins are the most valuable, and the quantity of oil procured from one bear is considerable. The slesh and fat are boiled together, and then the oil is separated; "this done," says du Pratz, "it is purified by throwing into it, while very hot, a large quantity of salt and water; a thick

**fmoke** 

smoke arises which carries off the disagreeable fmell of the fat; when the smoke is evaporated they pour the greafe, while still warm, into a pot, where it is left to fettle for eight or ten days, at the expiration of which a clear oil is found swimming at the top; this is taken off with ladles, is equally good with the best olive oil, and is used for the same purposes. Under it remains a lard as white as hog's-lard, but rather more foft, and which has neither a difagreeable taste or smell." This account of M. du Pratz is perfectly acceded to by M. Dumont, who adds, that the favages of Louisiana carry on a confiderable traffic with the French in this oil from the bears, that it never loses its fluidity but in intense frosts, when it becomes clotted, is of a dazzling whiteness, and is then eaten upon bread like butter. The author of the Dictionaire du Commerce says, that good bear's-greafe should be grey, viscid, and of a disagreeable flavour, and when very white it is adulterated with fuet. It is used as a topical remedy for tumours, rheumatic and other complaints, and many people have a high opinion of its falutary properties.

From their great quantity of fat, bears are excellent fwimmers. In Louisiana, Dumont says, they cross that great river with perfect ease; vol. vi.

they are very fond of the fruit of the guiacana; the trees of which they climb, and fit aftride upon the branches to eat it; they are also partial to potatoes and yams. In autumn they are so fat that they can hardly walk, at least are unable to run as fast as a man; on their sides and thighs, it is sometimes ten inches thick. The under part of their paws is large and swelled, and when cut there issues out a white milky juice. This part seems composed of glands resembling small nipples, and this is the reason, when confined to their dens during winter, they continually suck their paws.

The bear enjoys the senses of seeing, hearing, and seeling, in great persection, although compared with his size, his eye is small, his ears short, and his skin coarse and covered with a quantity of hair. His smell is, perhaps, more exquisite than that of any other animal; the internal surface of his nose being very extensive and excellently calculated to receive impressions from odoriserous bodies. Their legs and arms are sleshy, like those of man, and they strike with their paws in the same manner as he does with his sists; they have also a short heel bone, which makes part of the sole of the soot; in their kind of hands the thumb is not separated, and the largest singer is on the outside;

but whatever rude resemblances they may have to the human species, they only render them the more desormed without giving them the smallest superiority over other animals.

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SINCE the publication of the original work I have received the following particulars from M. de Musly, a Major in the service of the States General. He says, that at Berne they have several bears in a kind of domestic state. they are kept in large square ditches lined at the bottom and fides with stone, and where they have room to walk about; they have dens made for them, which are also paved, on a level with the bottom of the ditch, these are divided into two by walls, and are occasionally thut with iron gates; troughs of fresh water are fet for them in each ditch, and holes are left in the pavement sufficient to set up large trees on an end. Thirty-one years fince two young brown bears were brought thither from 002 Savoy, ozow.

Savoy, the male of which was killed by a fall from one of the trees into the ditch about two months ago (this account is dated October 17, 1771,) and the female is still alive. At the age of five years they began to generate, and from that time have regularly come in feafon in the month of June, and the female has brought forth in January. The first time she had only one, and from thence she has had from one to three, but never more; the three last years she had one each time, and the man who looks after her thinks she is now pregnant. When first whelped they are yellow, and white round the neck, and have not the smallest appearance of bears; they are blind four weeks; they measure about eight inches at first, and at the end of three months fourteen or fifteen; they are then almost round, and have a sharp pointed fnout; they are by no means strong until they are full grown, before which time the white hair is quite gone, having decreased by degrees, and the yellow is changed into a brown. Loo but has a lew vel over one follows

The male and female fometimes fight furiously, growling horribly at each other, but when in season the latter generally gets the better. The ditches in which these two bears were formerly kept, being to be filled up, they were

were necessarily separated for a few hours while removing to the other ditches prepared for them: on their meeting again they raifed themselves on an end, and embraced each other in a kind of rapture; and upon the death of the male, the female was much affected, and refused to eat for feveral days. But this attachment is not common to them, for, unless brought up and fed together from very young cubs, they cannot bear each other, yet after living thus together, the furvivor will not admit the approaches of another. They are very fond of climbing the trees put into the ditches, which are green larches, and placed there every May. They are commonly fed with rye-bread foaked in water; and they will eat all forts of fruits. When the female is near her time, she is furnished with plenty of straw, which she appropriates for her use, and then the male is removed, lest he should devour the young ones; they are allowed to remain with their mother for the space of ten weeks, when they are removed, and fed for some time with bread and biscuit.

M. de Musly afterwards informed me that the female they had thought pregnant was supplied with straw at the necessary time, but though she made a bed and rested upon it for three three weeks, she did not bring forth any thing; therefore, the last time she brought forth she had but one, and was at the age of thirty-one years. He likewise adds, that there are brown bears on Mount Jura, in Franche-compte, and in the country of Gex, which come into the plains in autumn, and do great damage in the chesnut woods."

There are two species of bears in Norway, one of which is much smaller than the other, in both there are different colours, such as dark and light brown, grey, and every shade of white, at least so says Pontoppidan; and also that they retire to the dens which they have prepared in October. Being very formidable, when wounded, three or four hunters usually go together, and as he easily kills large dogs, they use small ones, which run under his belly and seize him by the genitals; when nearly overpowered, he places himself against a tree, and throws tust or stones at his foes, until he is dispatched.

In the menagery of Chantilly there is an American bear, with fine, foft, straight black hair, whose head is longer, and snout shorter than the bears of Europe. And M. de Bertram mentions a bear that was killed near St. John's

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weighed 400lbs. and from which 60 Paris pints of oil were drawn.

relative views; projects, which having fociety for their bases, and for their object the confirmation of a dike, the erection of a reheldace or the foundation of a republic, imply that

### THE BEAVER. TO LO SOME

AS Man becomes civilized and improved, other animals are repressed and degraded. Reduced to servitude, or treated as rebels, and dispersed by force, all their societies are disfolved, and their talents rendered nugatory; their arts have disappeared, and they now retain nothing but their folitary instincts, or those foreign habitudes which they have acquired by example or human education. For this reason there remain no traces of their ancient talents and industry, except in those countries where man is a stranger, and where, undiffurbed by him for a long succession of ages, they have freely exercifed their natural talents, brought them to their limitted perfection, and been capable of uniting in their common defigns. The beaver feems to be the only remaining

maining monument of that intelligence in brutes, which though infinitely inferior in principle to that of man, supposes common projects and relative views; projects, which having society for their basis, and for their object the construction of a dike, the erection of a residence or the soundation of a republic, imply some method of understanding each other, and of acting in concert.

The beaver is faid to be among quadrupeds what the bee is among infects. Of focieties there are three species in nature which we ought to consider attentively before we begin to compare them; namely, The free fociety of man, to which, next to God, he is indebted for all his power; the constrained fociety of large animals, always rendered transitory by the human species; and the forced society of certain little animals, which, coming into existence at one time, and in the fame place, are obliged to live together. An individual, folitary as he comes from the hands of the Creator, is a sterile being, whose industry is confined to the use of his senses; nor is man himself, in a state of pure nature, unaffisted by the aids of fociety, capable of multiplying or of being edified. All fociety, on the contrary, necessarily becomes fruitful, provided it be composed

composed of beings of the same nature. From the necessity of seeking or avoiding each others a fuccession of common movements will follow. from which frequently some work will result that has the appearance of having been conceived, conducted, and executed with intelligence. Thus the labours of the bee, which in a given place, such as a hive, or the hollow of an old tree, forms its own cell; those of the Cayenne fly, which is not only the architect of its own cell but the hive which is to contain it, are labours purely mechanical, and suppose no intelligence, no concerted project, no general views, but nothing more than physical necessities, a result of common movements, are, at all times and places, performed in the fame manner, by a swarm of little creatures, not affembled from choice, but united by the force of nature. It is not fociety but numbers that operate in this case; it is a blind power which cannot be compared to that light by which all fociety is directed; I speak not of that pure light, that ray of divinity which has been communicated to man alone, and of which the beaver is certainly as destitute as any other animal. As their fociety is formed rather by a kind of choice than neceffity, and as, while it supposes at least a ge-Pp VOL. VI.

neral concurrence and common views, implies also a beam of intelligence, which, though widely different from that of man in principle, produces effects so similar as to warrant a comparison, not indeed with society, as it is found among civilized nations, but as it appears among savages just emerging from absolute solitude; a society which, with propriety, can alone be compared with that of animals.

Let us then examine the produce of these focieties, let us enquire how far the art of the favage extends, and where the talents of the beaver is limited. To break down a branch, to use it as a staff, to build a hut and cover it with leaves for shelter, to collect moss or have and to make a bed of them, are acts common to the animal and to the favage. To rub a stone so as to render it an edged instrument for cutting or stripping the bark of trees, for fharpening arrows, for flaying an animal, in order to make a covering of its skin; to make bow-strings of its finews, to fix those finews to a thorn or bone, and use them as needles and thread, these are acts which may all be performed by a man in a state of solitude, and without affiftance from others, fince they depend folely on his conformation, and only fuppose him to have the use of his hands. But,

to cut down, and transport a large tree, to raise a mole, or build a village, are, on the contrary, operations which necessarily suppose common labours and concerted views; these are the only performances which result from immature society in savage nations; while the operations of the beavers are the fruits of a perfected society among those animals; for it is to be observed, that they never attempt to build but in countries where they are in no danger of having their tranquility interrupted.

There are beavers in Languedoc, in the islands of the Rhone, and many in the northern provinces of Europe; but as all those countries are inhabited, or at least frequented by men, the beavers, as well as all other animals, are there dispersed, forlorn and timid creatures. There they have never been known to affemble, or undertake any common work: whereas in desert regions, where human society was formed more late, where some few veftiges of favages alone could be traced, beavers were every where feen united, forming focieties, and con-Aructing works which were the admiration of every beholder. Of this I shall endeavour to quote such testimonies as are most judicious and least liable to censure, and shall only confider as certain those facts which are confirmed

by common consent. Less inclined to indulge admiration, perhaps, than some writers, I shall not hesitate to doubt, and even to criticise, whatever may seem too improbable to demand our belief.

It is generally allowed that the beaver, far from having a superiority over other animals, feems to be inferior to many of them, in his merely individual qualities; and this fact I am enabled to confirm, by having had a young beaver, which was fent me from Canada, in 1758, alive in my possession for more than a twelvemonth. This animal is mild, peaceable, and familiar; it is rather inclined to be gloomy and melancholy, has no violent or vehement paffions, its movements are flow, it makes few efforts, unless to gain its liberty, which it frequently attempts by gnawing the gate of its prison, but without violence or precipitation. In other respects it seems to be perfectly indifferent, forming no attachments \* and is as little inclined to offend as please. He is inferior to the dog in the relative qualities which might make him approach to man; he appears formed neither to ferve, command, or even to affociate teffimonies as are mon fer affociate

<sup>•</sup> M. Klein, however, says that he kept a beaver for several years, which followed and would go in quest of him, as dogs fearch for their masters.

affociate with any species but his own. His talents are repressed by solitude, and it is by society with his own kind they are brought into action. When alone, he has little industry, few tricks, and not sufficient distrust to avoid the most obvious snares. Far from attacking any other animal, he has scarcely art to defend himself, always preferring slight to combat, he only resists when driven to an extremity and then bites very hard with his teeth.

If we consider this animal, then, in a state of nature, or rather in his dispersed and solitary state, we shall find, that his internal qualities are not superior to other animals; he has not the genius of the dog, the fense of an elephant, nor the cunning of a fox; and he is rather remarkable for external fingularities than for any apparent superiority of internal qualities. The beaver is the only animal who has a flat, oval tail, covered with scales, which serves as a rudder to direct his course in the water; the only one that has his hind-feet webbed, and the toes of the fore-feet separate, which he uses to convey food to his mouth; the only one which resembles a land animal in the fore-parts, and approaches the nature of an aquatic one in the posterior; in short he forms the same shade between quadrupeds and fishes, as the bat forms

forms between quadrupeds and birds. But these singularities would be rather desects than persections, if the beaver did not derive from this conformation, peculiar advantages which render him superior to all other animals.

The beavers begin to affemble in Tune or July in order to form themselves into a society. They arrive in numbers from all fides, and foon form a company of two or three hundred; the place of meeting is generally that where they intend to fix their abode, and is always by the fide of some lake or river. If it be a lake, wherein the waters always remain upon a level, they dispense with making a dam, but if it is a running stream, subject to floods and falls, they build a bank or pier quite across so as to fecure a piece of water always at the fame height, and this bank is frequently from 80 to 100 feet long, and ten or twelve thick at the base. If we compare the greatness of the work with the fize\* of the architect, it will appear enormous, but the folidity with which it is constructed is still more assonishing. They commonly choose that part of the river which is most shallow, and it possible, where some off at ano situpo ne lo seuten edi sidoclarge

<sup>•</sup> The largest beavers weigh from 50 to 60 pounds, and are seldom more than three seet in length, measuring from the tip of the nose to the insertion of the tail.

large tree is growing by the fide of the ffream; this they infrantly fet about cutting down, and although it is fometimes much thicker than a man's body, they very foon accomplish, without any other instrument than their four incifive teeth; and they always fo contrive as to make it fall across the stream; they next cut off the top branches to make it lie level. These operations are performed in common. Several are employed at the foot of the tree in gnawing it down, then others fever the branches, while others are, at the same time, engaged in parties along the banks of the river in cutting fmaller trees, from the fize of a man's leg to that of his thigh; these being cut to a certain length, they drag, by land, to the brink of the river, and then by water to the place allotted for their building; having pointed them at one end, they fink them down at small diffances from each other, and then interweave them with pliant branches; the placing these piles is the most difficult part of their operations, but which they accomplish by one party supporting the thick end with their teeth, while others plunge to the bottom and dig holes with their feet to receive the points that they may stand upright. While fome are thus employed, others bring earth and clay, which they prepare for their purpole

purpose with their feet and tails; and they transport it in fuch large quantities, that they block up all the intervals between the piles; and which piles are formed by a number of stakes in feveral rows, exactly of an height, are placed opposite to each other, and extend across the river: that this embankment may fustain the weight of the water, it is made floping, fo that although it is twelve feet at the base, it is not more than three at the top; from which ingenious contrivance it has not only the requifite thickness and solidity, but also a form of all others the most proper for confining the water, maintaining its weight, and baffling its attacks. Near the top of this bank they make two or three openings for the superfluous water to escape, and which they occasionally enlarge or contract as the river rifes or falls; and when by any fudden inundations their work is damaged, on the retreat of the waters they repair them with the utmost diligence. double and a sandarid.

After this display of their public labours, it would be superfluous to add a description of their private constructions, were it not necessary that, in history, an account should be given of every fact, and were not this first great work of the beaver, made with an uniform intention to render their smaller habitations more commodious.

commodious. These habitations are partly built upon piles on the banks of the river, and have two openings, one for the purpole of land, and the other for water excursions; they are either round or oval, and are of various fizes, from four to eight or ten feet in diameter: fome of them confift of three or four stories, and their walls are about two feet thick, raifed upon planks, which both ferve for foundations and floors. When they confift of but one ftory, the walls are only a few feet perpendicular, and then raifed in a curve, which terminates in a dome or vault, and ferves as a covering. They are constructed with such folidity as to be impenetrable to the heaviest rains, to defy the most impetuous winds, and are plaistered with excessive neatness, both within and without, as much so as if they were actually done by the hand of man; they nevertheless use no instruments for the preparation of this mortar than their feet, or for its application than their tails. They chiefly use wood, stone, fandy earth, and fuch materials as are not eafily dissolved with water; for the wooden work they take fuch trees as grow on the banks of rivers, which are more easily cut down, stripped of their bark, and carried, than folid timber, all which they are fure to accomplish VOL. VI. Qq upon

upon a tree which they have once attacked. They begin to cut a tree at the distance of a foot, or a foot and a half from the ground, and they fit as they work, for besides the advantage of this convenient posture, they have the pleafure of continually gnawing fresh bark and fost wood, both of which they prefer to most other kinds of aliment; of these they provide an ample store for their subsistence during winter,\* being averse to dry wood. It is in the water, and near their habitations, that they establish their magazines; to each cabin there is one allotted, proportioned to the number of its inhabitants, to which they have all a common right, and never plunder their neighbours. Some hamlets, if we may so call them, are composed of 20 or 25 cabins, but such large fettlements are rare; in common they do not confift of more than ten or a dozen families, each of which has its own diffrict, magazine, and habitation; nor will they allow strangers to come into their neighbourhood. The smallest dwellings contain two, four, or fix; and the largest eighteen, twenty, and it is even afferted thirty beavers; and it very feldom happens, that the males and females are not of an and bully read the control of equal

The space allotted for the provision of eight or ten beavers is from 25 to 30 feet in length, and eight or ten feet broad and deep.

equal number, Moderately speaking, therefore, their society may be said to consist frequently of 150 or 200, who having, at first, exerted their united industry in raising a great public work, afterwards form themselves into different bodies to construct private habitations.

However numerous the fociety may be, peace and good order are uniformly maintained; their union is strengthened by a common series of toil, and confirmed by the conveniences they have jointly procured; and the abundance of provisions which they amass and consume together, render them happy within themselves. Having moderate appetites, and an aversion to flesh and blood, they have not the smallest propenfity to hostilities or rapine, but actually enjoy all those bleffings which man knows only how to defire. Friends to each other, if they have threatened enemies abroad they know how to avoid them; and on the first alarm they give notice of their mutual danger by striking the water with their tail, the found of which is heard in their most distant dwellings; on this each provides for himself as he thinks most expedient; some plunge into the water, others conceal themselves within the walls of their own habitations, which is in no danger

Qq2

but from the fire of heaven, or weapons of man, and which no animal dares attempt to open or overturn. These asylums are not only fecure but neat and commodious. The floors are covered with verdure; young branches of the box and fir ferving them for carpets, and upon which they do not fuffer the smallest dirt. The window that fronts the water they use as a balcony to enjoy the fresh air, and to bathe, which they do the greatest part of the day, sitting in an upright posture in the water, with their heads and fore-parts only being visible. This element appears fo necessary, or at least fo pleasing, that they seem unable to do without frequent immersions in it; therefore, in making this window, they are very careful to guard against its being blocked up with the ice; when the river is frozen over, they make an opening in it, and fwim a confiderable way under the ice; at which times they are eafily taken, by attacking the dwelling on one hand, and at the fame time, lying in wait for them at a hole purposely made in the ice at some distance, and to which they are obliged to come for breath. The habit of continually keeping their tails and hinder parts in the water, feems to have changed the nature of their flesh: that of the fore-parts, as far as the reins, has the tafte and

and consistency of the slesh of land-animals, while the tail and posteriors has the smell, savour, and other qualities of sish. As for the tail it is even an extremity, an actual portion of a sish sixed to the body of a quadruped; it is a foot long, an inch thick, and sive or six inches broad; it is entirely covered with scales, and has a skin altogether the same as that of a large sish. These scales may be scraped off with a knife, and then the impressions are to be seen on the skin as in all scaly sishes.

It is in the beginning of fummer that the beavers affemble; they employ July and August in the construction of their banks and habitations; in September they collect their provifions of bark and wood, and afterwards, enjoying the fruits of their labour, they experience the sweets of domestic tranquility; this is the time of repose, and what is more the season of love. Acquainted with, and prepossessed in favor of each other, from habit, from the pleasures and fatigues of a common labour, no couple is formed by random, nor by physical necessity, but by inclination and choice. Happy in each other they pass the months of autumn and winter together, and scarcely ever separate. With every thing around them they wish at home, they never go out but upon agreeable and

and uleful excursions; on which occasions they bring home fresh bark, which they prefer to what is too dry, or been too much foaked in water. The females are faid to go four months with young; they bring forth towards the close of winter, and have two or three at a time. Nearly at this period the males leave them. who retire into the country to enjoy all the fweets of the spring; they pay occasional visits to their habitations, but refide there no more. The females, however, remain in them employed in fuckling, tending, and rearing their young, who are in a condition to follow them at the expiration of a few weeks; at which time they, in their turn, make fome excursions, feeding on crabs, fishes, and bark of young trees; and pass the whole of the summer upon the water or in the woods. They are not thoroughly collected again till autumn, unless their bank, or dwellings, should happen to be damaged by an inundation, in which case they affemble betimes to make the necessary repairs. They are more fond of refiding in fome places than others, and have been obferved to return every fummer, after their works have been repeatedly demolished, to repair them, till harraffed by this perfecution, and weakened by the loss of several of their troop,

troop, they have, with one consent, deserted it, and retired to some more secure and less frequented neighbourhood.

Winter is the feafon principally allotted for hunting them, as it is then only their fur is in perfection; and when, after their dwellings are demolished, a number of them are taken, their fociety is never restored; but those which escape captivity or death, become houseless wanderers. Their genius is overcome by apprehension, and they never more attempt to exert it, but conceal themselves in holes under ground, and reduced to the condition of other animals, they lead a timid life, employing themselves only to fatisfy their immediate and urgent wants, they no longer retain those qualities which they so eminently possess in their focial state. However marvellous the description we have just given of the fociety of the beaver may appear, it is beyond a doubt strictly consonant to truth. A number of occular witnesses have agreed in their writings to every fact I have mentioned; and if the present recital differs from some authors whom I have followed, it is only in fuch points as appeared to me to be too marvellous and improbable to be believed. Many writers, not content with ascribing to the beaver focial manners, and evident talents for architec-

architecture, have attributed to them general ideas of policy and government. They have afferted that when their fociety is formed, they reduce travellers and strangers of their own species into slavery; that they employ them in carrying their clay and wood; that they treat in the same manner the idle who will not, and the old who cannot, work; that is, they throw them upon their backs, and use them as so many vehicles to carry their materials; that they never affemble in an even number, for the purpose of having, in all their deliberations, a cafting voice; that each tribe has its peculiar chief; that they have centinels established for the public fecurity, that when chased they tear off their testicles to satisfy the avarice of their pursuers; that when thus mulitated they turn about and present themselves to obtain mercy\*, &c. Although we discredit these exaggerations, yet we must not reject those facts which have have been established by moral certainties. A thousand times have the works of the beaver been viewed, overturned, measured, designed, and engraved; and every doubt is banished, by fome of their fabrics still subsisting; for though less common than when North America was first

This is affirmed by Ælian, and all the other ancient writers, Pliny excepted, who absolutely denies it.

first discovered, the latest missionaries and travellers, who have visited the northern parts of that continent, unanimously concur in having met with them.

By these we are told that, beside the beavers. who live in focieties, there are others which lead a life of solitude; who have been rejected from the body, by having been guilty of some crime against it, and, therefore, are not allowed to partake of its advantages; they have neither house nor magazine, and are forced to live, like the badger, in holes under ground. They are eafily distinguished from their coats being always dirty, and their hair rubbed off by the friction of the earth. Like the otters they inhabit the edges of rivers, where some of them dig a ditch several feet deep, in order to make a pond that may reach to the mouth of their hole, which has an internal ascent; there are, however, others which live at a confiderable distance from the water. All the European beavers are solitary, and their fur is not near fo fine as that of those who live in fociety. They differ in colour according to the climate they inhabit. In the northern countries they are black, and those are the finest, although among those there are some found entirely white, some grey, and others with red spots. The Rr VOL. VI.

The farther they are removed from the north the more bright and varied we find their colour. In the north part of Canada they are chefnut, and among the Illionois they are yellow, or olive-coloured. There are beavers in America from the 30th degree of north latitude to beyond the 60th. They are common in the north part, and gradually decrease towards the fouth. This is also the case in the Old Continent; we never find them numerous but in the northern countries; and in France, Spain, Italy, Greece, and Egypt, they are very rare. They were known to the ancients, and by the religion of the Magi it was forbidden to kill them. Upon the borders of the Euxine fea they were common, and were called canes pontici; but it is probable they did not enjoy much tranquillity in the neighbourhood of this fea, (which from the earliest time has been frequented by mankind) fince none of the ancients speak either of their society or labours. Ælian, in particular, who had fuch a propenfity to the marvellous, and who I believe was the first who mentioned their dismembering themselves to delay the hunters, would never have omitted enlarging on the wonders of their republic, and genius for artichecture. Would Pliny, whose bold, gloomy, and sublime genius

was always bent upon degrading man to exalt Nature; would he have forborne to have compared the labours of Romulus with those of the beavers? It seems, therefore, that their industry, and talents for building was unknown to the ancients; and although in latter ages, beavers have been found in Norway, and other northern parts of Europe, with habitations of their own construction; and though there is no reason to doubt the ancient beavers did not build as well as the moderns, yet as the Romans did not penetrate so far north, it is not surprising they should have been unnoticed by their writers.

Several authors have said, that the beaver, being an aquatic animal, could not live solely on land; but this opinion is erroneous, for the young beaver sent me from Canada, was reared in the house, and when taken to the water, was afraid of it, and refused to go in; when plunged into the bason, there was a necessity to hold him there by sorce; but in a sew minutes he became persectly reconciled; afterwards, when left to his liberty, he would frequently return to it of himself, and even roll upon the dirt and wet pavement. One day he escaped and descended by a stair-case into the subterraneous vaults in the Royal Garden, and swam a considerable time in

the flagnant water at the bottom of them, yet no fooner did he fee the light of the torches, which were brought to fearch for him, than he returned, and suffered himself to be taken without the smallest resistance. He is familiar without fawning, and is fure to alk for fomething to eat from those he sees at table, which he does by a fmall plaintive cry, and some gestures with his fore-paws. When he obtains a morfel he carries it off and conceals it, that he may eat it at his ease. He sleeps pretty often, and then lies upon his belly. No food comes amiss to him, meat excepted, which he constantly refuses either raw or dressed. He gnaws every thing he comes near, and it was found necessary to line with tin the barrel in which he was brought over.

Though the beavers prefer the borders of lakes, rivers, and other fresh waters, yet they are fometimes found on the fea-shores, especially Mediterranian gulphs, which receive great rivers, and where the waters are less falt. They are professed enemies to the otters, whom they hunt, and will not even permit to appear in the waters which they frequent. The fur of the beaver is more beautiful and thick than that of the otter; it is composed of two forts of hair, the one short, bushy, foft as down, and impe-

netrable

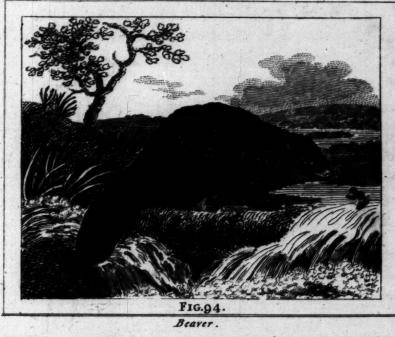
netrable to the water, immediately covers the Ikin; the other longer, briftly, and shining, but thinner, ferves as an upper coat, and defends the former from filth and dust. The latter is of little value, it is the first alone which is used by our manufacturers. The blackest furs are generally thickest, and consequently most esteemed; nor is the fur of the solitary beavers equal to that of those who live in society. These animals, like all other quadrupeds, shed their hair in fummer, and, therefore, the fur of fuch as are taken in that feason are of little value. The fur of the white beaver is esteemed because of its rarity; and the perfectly black are nearly as uncommon as the white. But, independent of the fur, which is the most valuable article, the beaver furnishes a substance which has been confiderably used in medicine; it is known by the name of castoreum, and is contained in two large bladders, and which the ancients mistook for the testicles of the animal; but as they are to be found in every pharmacopæia, it is unnecessary to give here a description of them or their uses\*. The savages are said to obtain an oil from the beaver's tail, which they

<sup>•</sup> It is pretended, that the beavers extract this liquid by preffing the bladders with their feet, and that it gives them

they apply as a topical remedy for different complaints. The flesh of this animal, though fat and delicate, is yet bitter and disagreeable to the palate. It is affirmed that its bones are of an excessive hardness, a circumstance of which we are unable to determine, having never dissected but one, which was very young. Their teeth are very hard, and so sharp, that the savages use them to cut, hollow, and polish their wood; who also clothe themselves with its skin, and in the winter they wear it with hair next their bodies.

The beaver uses its fore-seet like hands, with as much facility as the squirrel; the toes of the hind-seet being connected by a strong membrane, supply the place of fins, and expand like those of a goose, which the beaver somewhat resembles in its walk. He swims much better than he runs; and as his fore-legs are much shorter than his hind ones, he always moves along with his head very low and his back arched. His senses are very acute, and that of smelling so delicate that he will not permit any dirt or filth to remain near him. When kept in confinement too long, and he is under the necessity

an appetite when disgusted with food, and that the savages, to entrap them, wet the snares with it. But it is more certain, that the animal uses it to grease its hair.





Rublished by I.S. Barr Feb. 4th 1792.



necessity of voiding his excrements, he drops them close to the threshold of the door, and as foon as that is opened, pushes them out. This habit of cleanliness is natural to them, and our young beaver never failed to purify his apartment in this manner. At the age of one year he gave figns of ardour for a female, which feems to be a proof he had then nearly attained his full growth; therefore their duration of life cannot be very long, and it is probably wrong to extend it to fifteen or twenty years. The beaver I had was very small for his age; a circumstance that is not surprising, since he had been in perpetual confinement from his earliest days, and from being unacquainted with water until he was nine months old, he could not, therefore, be expected to grow and expand like those who, while they enjoy their liberty, range at pleasure in that element which seems to be almost as necessary to them as that of land. The first maying one of and trobs of to a large to the southern address with the sale has

## ' SUPPLEMENT.

IN confirmation of our former remarks that beavers might be eafily tamed, M. Kalm, in his Voyages, fays, that he had feen beavers fo tame that they would go out to fish and bring the prey home to their masters; nay that they would even follow men and dogs, go with them into their boats, jump into the water, and soon come up again with fish. And M. Gmelin affirms that he saw a beaver in Siberia, which had been reared in the house, who would go to considerable distances, sometimes returning with a semale whom he would suffer to go away by herself after the season of love.

# THE RACCOON.

not, the chief, be <u>expected to chavend expelial</u> her that who, while they enjoy, their liberry,

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enther to extend to up filters or enther real to the age ; the bear of the base of the bas

SEVERAL authors have described this animal under the name of coati, yet I have chosen to adopt the name given to it in England, that it may not be mistaken for, and confounded with, the real coati, or the coati-mondi, which appears to be nothing more than a variety of that species.

I had a Raccoon (fig. 95) alive, and which I kept more than twelve months; he was about the fize of a small badger, his body short and and bulky, his hair long, thick, black at the points, and grey underneath; his head was like that of a fox, but his ears round and shorter: his eyes were large, and of a yellowish green, and over them a black band went across; his fnout was sharp, and his nose rather inclined upwards; his under lip was less prominent than his upper one; he had, like the dog, fix incifive and two canine teeth in each jaw; his tail was bushy but tapering towards the point, marked with alternate black and white rings from one end to the other, and was at least as long as the body; his fore legs were much shorter than his hind ones, and each had five toes armed with strong sharp claws. He used his fore feet to hold his food while eating, but his toes not being flexible he could not grafp any thing with one paw, but was obliged to use both when food was presented him.

Though the raccoon is short and bulky he is very active; his pointed claws enable him to climb trees with great facility; he runs up the trunk with ease, and frolics to the extremities of the branches in perfect security. On the ground he rather bounds than runs, and his motions, though oblique, are always quick and light. He is a native of the southern parts of America, nor has ever been sound you. vi.

upon the old continent, at least if we may judge from the entire silence of travellers about him. In the regions of America, he is, however, very common, particularly in Jamaica, where he resides in the mountains, from whence he often descends to feed upon the sugar-cane. He is not met with in Canada, nor in the northern parts of the continent; and yet he is not afraid of cold. M. Klein reared one at Dantzick; and the one I had passed a whole night with his feet in the ice, without being incommoded.

Every thing he has given him to eat he dips in water, especially bread, which he will not take out again, unless pressed with hunger, before it is perfectly foaked; but when very hungry he will eat dry food, and any thing presented to him. He searches about in every corner, and eats every thing he meets with, whether flesh, dressed or raw, fish, eggs, live fowls, corn, roots, &c. He likewise devours infects, is fond of hunting spiders, and when at liberty in a garden, fnails, worms, and beetles, are his favorite prey. He is exceedingly fond of fugar, milk, and other kind of fweet aliments, fruit excepted, to which, however, he prefers either flesh or fish. He retires to void his excrements; is a familiar and even fawning animal;

mal; mine used to jump on those he loved, and to frisk and play about them cheerfully; he was cleanly, for ever in motion, and seemed to possess much of the nature of the maki, and some of the qualities of the dog.

#### SUPPLEMENT.

He factions to be the entropy of the

A letter I received from M. Blanquart des Salines, dated October 29, 1775, contained many particulars concerning the Racoon. This gentleman fays that the one in his posfession had constantly been kept chained, in which state he appeared gentle, yet shewed no inclination to be fond, but whenever he procured his liberty his docility disappeared, and on one occasion they had great difficulty to fecure him again. M. Salines, however, often permitted him to go about with his chain loofe, for which he would appear very grateful, but that was not the case whenever he procured his own liberty, as he would then roam about for three or four days together, and do a great deal of mischief, by getting into the hen-houses

of a night, killing all the poultry, and eating only their heads. When chained he would use much art, permitting the fowls to partake of his food, until supposed security had put them off their guard, and they came within his reach, when he would seize and tear them to pieces. He opened oysters with great dexterity, putting them under his hind feet, and then entering the weakest part with his fore claws feparated the shells in an instant: he performed this, as well as all other of his operations, by feeling alone, feldom making use either of his eye or his nofe. He does not appear to have much gratitude for favors, but very refentful for ill-treatment, for a fervant having given him a few strokes with a whip, he would never afterwards fuffer him to come near without expressing the utmost rage; slying at the man, making the most violent cries, and refusing every thing offered until he disappeared. When attacked by any thing stronger than himself he makes no refistance, but rolls himself up somewhat in the manner of a hedge-hog, and in which state he will even suffer himself to be killed without uttering the smallest complaint. He never lies upon any bed, but invariably turns out the straw, or any thing put into his house to answer that purpose. He does not appear

appear to be affected by cold, nor folicitous for warmth, for he has been covered with fnow without injury, and one frost, on being prefented with warm water and some almost frozen, for him to foak his food, he always used the latter; and notwithstanding he might have gone into the stable to sleep he generally preferred a corner in the yard. He never wets fresh or bloody meat, but every thing that is dry he puts into water. He has an utter dislike to children, their crying puts him into a paffion, and he would fly upon them if possible; this seems to spring from an abhorrence of sharp founds, for he often chaftised a fmall bitch, of which he is very fond, if the barked too loud. her the same and and the orad

## THE COATL STORY OF THE COATL STORY

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THIS animal has been called by many authors the Coati-mondi; I have had it alive; and, by comparing it with the coati mentioned by Thevet, and described by Marcgrave, I had not the least reason to doubt their being varieties

varieties of the same species; indeed Marcgrave, after having given a description of the coati, says there are others of the kind of a blackish brown, and which, for the sake of distinction are called coati-mondi at Brasil. As the colour of the hair then is the only difference between them, they certainly ought merely to be considered as varieties of the same species.

The Coati (fig. 96) is very different from the animal described in the preceding article. He is of a smaller size than the raccoon; his body and neck, head and nose, are of a longer form; the upper jaw is terminated by a snout, which extends an inch, or an inch and a half, beyond the lower one; and this snout, which is moveable in every division, turns up at the point. The eyes of the coati are also smaller than those of the raccoon; his ears are shorter; his hair longer and more coarse; his legs shorter; his feet longer; but, like the raccoon, his tail is diversified with rings\*, and to all its feet there are five toes.

Some authors have supposed the sow-badger, and the taxus-suillus, of which Aldrovandus

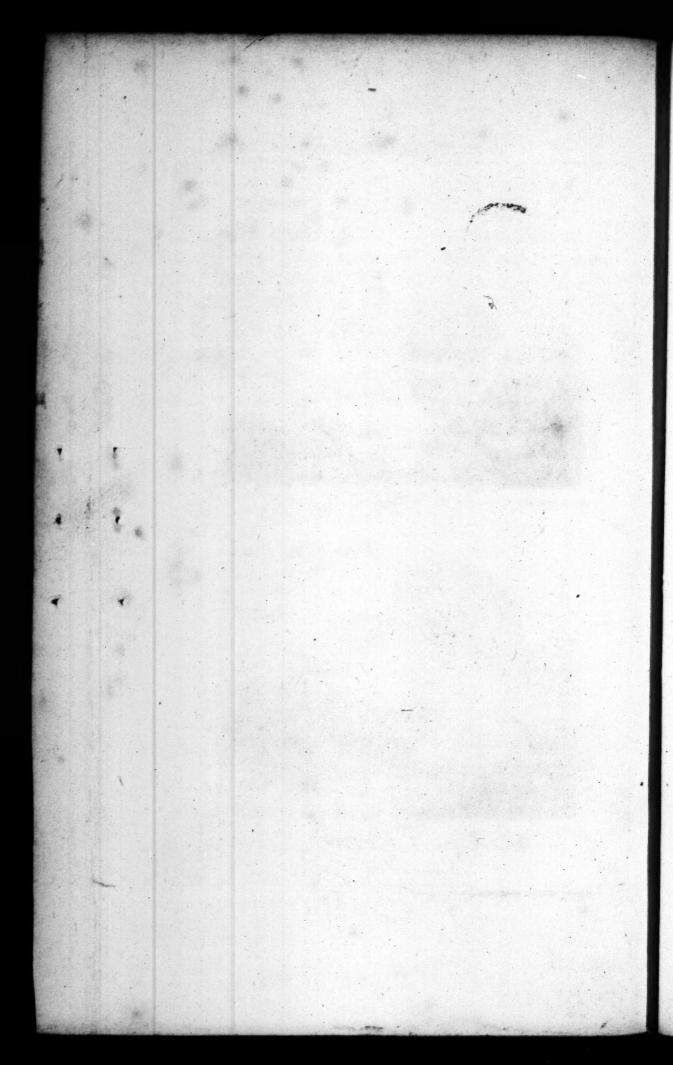
There are some coatis which have the tail of one uniform colour, but as they differ in no other particular, they can only be considered as varieties of the same species.





Black D! Brown Coati

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has given a figure, to be the same as the coati; but if we consider that the sow-badger, of which hunters speak, is supposed to be found in France, and even in some colder climates of Europe, and that, on the contrary, the coati is only known in the southern parts of America, this idea must be rejected, as having no soundation to support it; as the figure given by Aldrovandus is nothing more than a badger, to which the snout of an hog has been added. That author does not say this taxus-suillus was drawn from Nature, nor does he give any description of the animal itself; and indeed the snout alone of the coati is sufficient to distinguish it from any other quadruped.

The coati has a practice of gnawing his own tail, which, when not mutilated, is longer than his body, and which he generally rears aloft, and moves with ease in any direction. This seemingly unnatural taste of gnawing their tails is not peculiar to the coati, for some monkeys, and other animals with long tails, frequently shorten them a sourth, or even one-third, in this very manner. From this circumstance a general inference has been drawn, namely, that in very long members, the extremities of which must consequently be very remote from the centre of sensation, the feeling

must

must be weak, and the more so the greater the distance and the smaller the part, for if the extremities of the tails of these animals were very sensible the pain excited would prevail over inclination to mutilate, and they would preserve their tails with as much care as any other part of the body.

The coati is an animal of prey, which subfists on slesh and blood, and which, like the fox or martin, destroys small animals and poultry, hunts for the nests of birds, and devours their eggs; and it is, probably, from this conformity of disposition, rather than from any resemblance to the martin, that the coati has been considered as a small species of the fox,

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THE Agouti (fig. 98) is about the fize of a hare, and has been confidered by many writers as a kind of rabbit, or large rat; yet in very trifling marks does it bear a refemblance to either, and in its natural habits it effentially differs

differs from them both. It has the hair, grunting, and voracious appetite of the hog; and when fully fatiated it hides the remainder of its food, like the fox, in different places. It delights in gnawing and spoiling every thing it comes near. When irritated it bites fiercely; its hair stands erect along the back, and it strikes the ground violently with its hind feet. It does not dig holes, like the rabbit, but lives in the hollows of trees. It feeds chiefly on roots, potatoes, yams, and fruits; those that reside in the woods also eat leaves, plants, and shrubs. It uses its fore paws, like the squirrel, in carrying food to its mouth; it runs very swiftly up hill, or on even ground, but its fore paws being much shorter than its hind ones, upon a descent it is in great danger of falling; it has a good fight and excellent hearing, and whenever it hears a whiftle it stops to listen. They scald the agouti and dress it like a sucking pig, and the flesh of such as are fat and well fed is tolerable food, though it has always a peculiar tafte, and is rather tough. When they go among the fugar-canes they are eafily taken, for finking every step in the straw and leaves, which covers the ground, a man may come up with, and even kill them with a stick. When in VOL. VI.

in the open country it runs with great fwift's ness before the dogs; and having gained his retreat, nothing can force him to come out but fmoke; for which purpose the hunters burn faggots and straw before the mouth of the hole, upon which the animal makes plaintive cries like that of a pig, but feldom quits the place of concealment until the last extremity. When taken young they are tamed, and will go out and return alone. When in a wild state, they generally dwell in the woods, where the female choose the most obscure parts, and there prepares a bed of leaves and grass for her young. They usually bring forth two or three at a time, and in a day or two afterwards, she carries them in her mouth like a cat, into the hollow of some tree, where she suckles them for a short space, for they are soon in a condition to run about and provide for themfelves; from which it appears that the time required for their growth is but short, and of course, the duration of their lives cannot be long. caller talks, and is Facher tough

The Agouti appears to be a native of the fouth parts of America, not being known in the old continent. They are common in Brafil, Guiana, St. Domingo, and all the islands around.

around. To subsist and multiply, they require a warm climate, yet they will live in France if well sheltered from wet and cold, especially in winter; it is even a stranger in the cold and temperate climates of America. In the islands there is only this one species of agouti, which we have described, but in the other places, above named, it is affirmed there is another species called the agouchi, which is much smaller than the first, but we have the testimony of several persons who resided a long time at Cayenne, who were equally acquainted with the agouti and agouchi, that the one we have described is certainly the agouti. The latter we have never been able to procure, but the former we had alive; it was as large as a rabbit, its hair was course, and of a brown colour, with a fmall mixture of red; its upper lip was like that of the hare, its tail was shorter than that of a rabbit, its ears very short and broad, and its upper jaw was more prominent than the under; its fnout was like that of the loir, and its teeth refembled the marmot's; its neck was long, its legs were flender, and on its fore-feet it had four toes, and three on its hind ones. Marcgrave, and almost all naturalists after him, have faid that the agouti has fix toes on the

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hind feet. M. Brisson is the only writer who has not copied this error of Marcgrave, he defcribed it from nature, and, like us, perceived only three toes on the hind-feet.

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M. de la BORDE fays, that the agouti is a very common animal in Guiana, that its flesh is as white as that of the rabbit, and is of a fimilar flavour; that they are hunted by dogs, taken in traps, and that the Negroes take them in great numbers by whistling, or imitating their cries; that they principally feed upon nuts, which they collect and conceal in great quantities; that they are very prolific, producing as many, and as often as the rabbit; that they are eafily tamed, but always retain fomewhat of their favage disposition, yet if they go from home will return again of themfelves; and that they keep in their holes during the night, unless the moon thines very clear, and are running about the greatest part of the day.

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## THE LION.

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THE influence of climate is marked with but flight variations in the human species; because that is entire in itself, and totally distinct from every other. Man, white in Europe, black in Africa, yellow in Afra, and coppercoloured in America, is still the same being, tinctured with the colour peculiar to the climate. As he is formed to govern the earth, and as he has the whole globe for his habitation; it feems as if no fituation was foreign to his nature; under the scorching south, or in the frozen regions of the north, he lives, he multiplies, and has been so anciently diffused over every country, that he does not appear to have a particular propenfity to any. It is far otherwise with other animals; in them the influence of climate is marked with stronger characteristics, because their species are diversified, and their nature is less perfect and more confined than that of man. Not only are the varieties in each species more numerous

numerous, but even the differences in the fpecies themselves seem to depend on the differences of climate. Some animals can only breed in hot countries, others cannot subsist but in cold The lion never inhabited the northern regions, nor was the rein-deer ever found in the fouth; and perhaps no species has been univerfally diffused over the face of the earth, befides that of man. Each has its country, its native foil, to which it is confined by a phyfical necessity; each is the immediate offspring of the region which it inhabits; and it is in this fense alone we say, this animal is a native of one climate, and that a native of another. In hot countries the terrestrial animals are larger and stronger than in the frozen or temperate ones. They are also more bold and ferocious; all their natural qualities feeming to partake of the ardour of the climate. Lions born under the fcorching fun of Africa, are of all others the most fierce and formidable. Our wolves and other carnivorous animals, are hardly worthy to be their providers\*. The lions of America, if they deserve to he so called, are, like the climate, infinitely more mild; and what proves that the degree of their ferocity depends on -Akta to wait their bosiners agent box factore the

There is a species of lynx which is called the Lion's provider.

the degree of heat is, that in the same country, those which inhabit the high mountains, where the air is temperate, are different in disposition from those that dwell in the plains, where the heat is excessive. The lions of Mount Atlas. of which the top is sometimes covered with fnow, have neither the boldness, strength, nor ferocity of the lions of Biledulgerid, or the defert of Zaara, whose plains are covered with burning fands. In these deserts it is where those terrible lions are found which are the dread of travellers and the scourge of neighbouring provinces. Happily for man this species is not numerous, and feems to diminish daily; for those who have travelled through this part of Africa affirm they are by no means so numerous now as they were formerly; and Mr. Shaw, in his Travels, fays, the Romans drew fifty times as many lions from Lybia, to combat in their amphitheatres, as are now to be found in the whole country. It is also remarked, that in Turkey, Persia, and India, lions are much less numerous than they were in ancient times. Since this animal preys on every other other species of quadruped, and is himself the prey of none, it is obvious, that its decrease can only be occasioned by the increase of mankind, who are the only beings in nature capable

capable of making head against this king of beafts; and it must be allowed, powerful as he may be, he is no match for even an Hottentot or Negro, who often attack him, and very feldom without coming off victorious. As the lion has no enemy but man, and his species being reduced to the fiftieth, or even the tenth part of what it was formerly, it follows, that the human species, instead of having suffered a confiderable diminution fince the time of the Romans, as is by some pretended, is on the contrary more generally diffused, and more numerous even in fuch countries as Lybia. The industry of man encreases in proportion with his numbers, but that of other animals remains always the same. Every destructive species, like that of the lion, feems to be driven to diftant countries, or reduced to fmall numbers, not only because man has become every where more numerous, but because he has become more skilful and invented dreadful arms of destruction, which nothing can relist; arms, which happy would it have been, had they never been employed against aught but lions and tigers.

This fuperiority of numbers, and in the arts of the human species, which has subdued the lion, serves also to enervate and discourage him,

for he is brave only in proportion to the fuccess of his encounters. In the vast deserts of Zaara, in the burning fands which feparate Mauritania and Negro-land, and in all the deferts of Asia and Africa, where man has disdained to fix his habitation, lions are still numerous and preferve their natural force and courage. Accustomed to measure their strength with every animal they meet, the habit of conquering renders them intrepid and terrible. Having never experienced the force of his arms, they have no apprehension from the power of man, but boldly face and hold him in defiance. Wounds enrage, without repressing their ardour; they are not daunted even by the appearance of numbers. A fingle lion of the defert often attacks a whole caravan, and if, after an obstinate engagement, he finds himself overpowered, instead of slying, he retreats fighting, and faces the enemy to the last. On the contrary, those lions which inhabit the peopled countries of Morocco, or India, having become acquainted with man, and experienced the fuperiority of his arms, have lost their native courage to fuch a degree, that they are to be scared away with a shout, and seldom attack any but the unrefifting flocks and herds, which even women and children are fufficient to protect against them.

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This alteration in the disposition of the sion. proves that he might be tamed to a certain degree, and admit a species of education. We read in hiftory, of lions being yoked to triumphal cars, led forth to the field of battle, or let loofe to the chace, and that faithful to their masters, they never exerted their strength or courage but against his enemies. Certain it is that the lion when taken young, and bred up with domestic animals, becomes familiar and sports innocently among them; that he will even be careffing to his mafter, and that if his natural ferocity returns, he seldom exercises it against his benefactor. As his passions are strong, and his appetites vehement, we ought not to prefume that the impressions of education will overbalance them; and therefore it would be dangerous to fuffer him to remain too long without food, or wantonly to perfift in irritating or tormenting him. He is not only enraged by bad treatment, but remembers it and meditates revenge; in the same manner he also remembers benefits and endeavours to flew his gratitude for them. In support of this we might recapitulate a number of well authenticated facts. but it is sufficient that they prove his anger is noble, his courage magnanimous, and his difpolition grateful and susceptible of impressions. He

He has often been seen to despise contemptible enemies, and to pardon their infults when it was in his power to punish them. When in confinement he becomes gentle, will carefs the hand that feeds him, and will fometimes spare the lives of those animals which are thrown to him for prey; he will even live peaceably with them, spare them part of his subsistence, and has even been known to want food himself rather than be the means of depriving them of that life which his generofity had spared. The lion cannot be faid to be cruel, fince he acts from necessity and never kills more than he consumes; while the tiger, the wolf, and all the inferior species, such as the fox, martin, polecat, ferret, &c. kill without remorfe and feem rather to fatisfy their malignity than their hunger.

The outward form of the lion speaks the superiority of his internal qualities. His figure is striking and respectable; his look consident and bold; his gait stately, and his voice tremendous. His bulk is not overgrown like that of the elephant, or the rhinoceros; nor is his shape clumsy like the hippopotamus, or the ox. He is in every respect compact and well-proportioned; a perfect model of strength joined with agility. He is muscular, bold, and neither charged with fat nor unnecessary sless. He

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manifests his muscular power by the ease with which he makes prodigious bounds and leaps; by the strong and swift movements of his tail, which alone is sufficient to throw a man to the ground; by the facility with which he moves the skin of his face, and particularly that of his forehead, which adds greatly to the expreffions of fury in his countenance; and, laftly, by the power he has of moving the hair of his mane, which is not only briftled up but agitated on all fides when he is enraged.

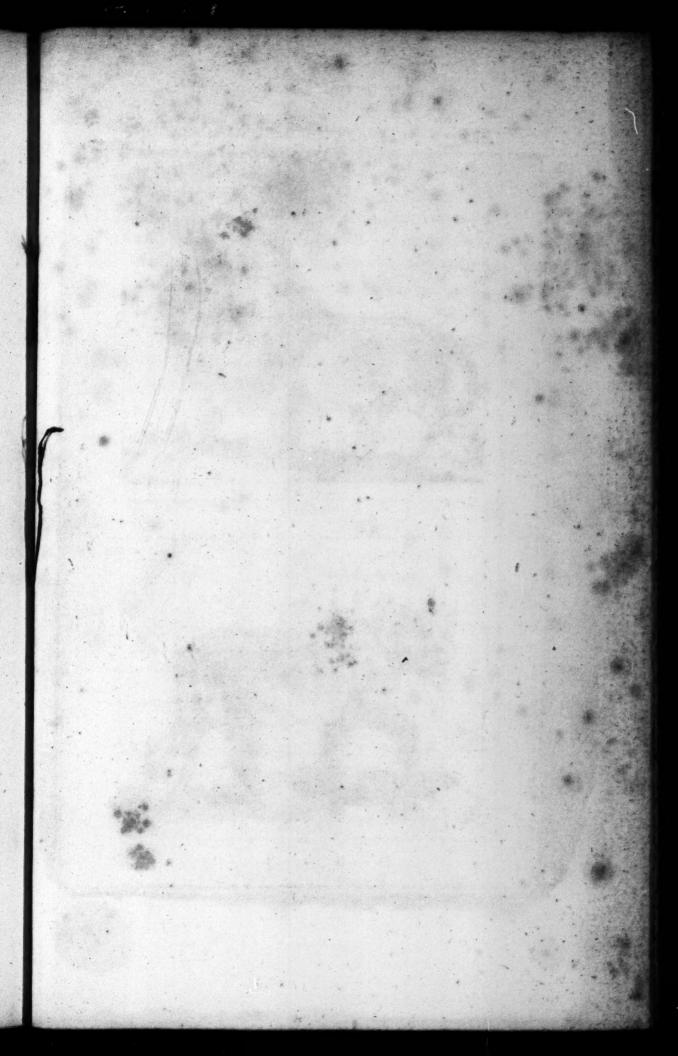
To these eminent qualities the lion joins all the dignity of his species. By dignity of species I mean those whose nature is permanent, invariable, and not subject to degradation. Those animals, to which this fingular advantage belongs, the characteristics are so strongly marked, that they cannot be mistaken nor confounded with any other species. In man, the noblest being of the creation, the species is sole and entire, because all the individuals of it, of whatever race, climate, or complection, may intermix and produce together; and because it cannot be said that any animal approaches to man in any natural degree. The horse is less noble considered as a species than as an individual, fince the neighbouring one of the ass is so near, that one of each species will produce

produce animals which Nature reprobates as baftards, unworthy either race, and renders incapable of perpetuating either species from whence they fprung, but which in itself exhibiting a mixture of both, proves, beyond a doubt, their close affinity. The species of the dog is perhaps less noble, because he seems to be allied to that of the wolf, the fox, and jackall, who may all be confidered as degenerate branches of the fame family. In defcending by degrees to the inferior species, fuch as the rabbit, weafel, rat, &c. we shall find that each of them has fuch a number of collateral branches that we cannot trace the original flock; and, laftly, in the tribes of infects, each species is accompanied with such a number of approximate ones, that we are obliged to confider them as belonging to a certain genera. This is the only use of what is called method in Natural History, which ought never to be employed unless in the difficult enumerations of small objects, as it becomes useless and ridiculous when treating of beings of the first rank. To class man with the monkey, or to fay that a lion is a cat with a long mane and tail, is rather to degrade and disfigure Nature than to describe and denominate her works. The species of the lion, therefore,

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therefore, is one of the most noble, fince it is most entire, and cannot be confounded with those of the tiger, leopard, ounce, &cc. and fince those species, which appear to be the least remote from the lion, are so little distinct from each other, as to have been perpetually mistaken and confounded by travellers and nomenclators, along and housely on baille of

The largest lions are about eight or nine feet in length, from the fnout to the tail, which is four feet long, and are between four and five feet high. Those of the small size are about five feet and a half long, three feet and a half high, and their tail rather more than three feet long. In all her dimensions the lioness is about one fourth less than the lion. Aristotle divides lions into the greater and smaller, and the latter, he fays, are short in proportion, have their hair more frizzled, and are less courageous than the former. He adds, that in general all lions are yellow. The first of these affertions appears doubtful, fince no traveller has mentioned lions with frizzled hair; fome authors, indeed, who, in other respects do not merit entire confidence, speak of a tiger with curled hair found at the Cape of Good Hope; but almost all testimonies agree as to the colour of the lion, which is uniformly yellow on the



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the back and whitish on the sides and belly. Ælian and Opian have afferted, that in Ethiopia the lions are as black as the men; that in India there are some white, and others spotted and striped with red, black, and blue; but this is not confirmed by any authentic testimony, for Mark Paul, the Venetian, does not speak of these striped and spotted lions as if he had feen them, and Gesner observes that he only mentions them on the authority of Ælian. It appears, on the contrary, that there are few or no varieties in these species; that the lions of Asia and Africa perfectly resemble each other, and that those of the plains differ less in colour from those which dwell in the mountains than in fize.

The lion (fig. 99) is furnished with a mane, or rather long hair, which covers all his fore-parts, and becomes longer as he advances in age; but the lioness, (fig. 100) however old, is without this appendage. The American animal, which the natives of Peru call Puma, and Lion by the Europeans, has no mane, and is smaller, weaker, and more cowardly, than the real lion. It is not impossible, that the mildness of the climate in South America might have such insluence on the nature of the lion as to strip him of his mane, reduce his size,

fize, and repress his courage; but it appears absolutely impossible that this animal, which inhabits the tropical regions only, and to whom Nature, to all appearance, has shut up every avenue to the north, should pass from the southern parts of Asia or Africa into America, those continents being divided towards the south by immense seas. From this circumstance it is probable that the puma is not the lion, deriving its origin from those of the old continent and since degenerated, but that he is an animal peculiar to America, like other animals found on the new continent.

When the Europeans first discovered America, the quadrupeds, birds, fishes, insects, plants, and almost every thing appeared to be different from what they had feen before. Of this new world it was therefore necessary to denominate the principal objects. As the names given by the natives were for the most part barbarous, and difficult to pronounce or remember, names were borrowed from the European languages, especially from the Spanish and Portuguese. In this dearth of denominations, a fmall affinity in external appearance, fize, or figure, was sufficient to attribute to unknown objects the names of those that were familiar. This practice opened a field for doubt, perplexity,

plexity, and confusion, since, at the same time, the productions of the new continent, were receiving the denominations of those of the old one, plants and animals peculiar to the latter were transporting there in abundance. To remove this obscurity, and to avoid falling into perpetual errors, it is necessary to distinguish carefully what belongs to the one continent from what belongs to the other. Of this distinction I shall shew the necessity in the next article, where I shall enumerate not only the animals which are natives of America, but those which have been carried thither.

M. de la Condamine, whose testimony deferves our full confidence, fays expressly, that he does not know whether the American animal which the Spaniards call Lion, and the natives of Quito, Puma, deserves the name of Lion; he adds, that it is much smaller than the African lion, and that the male has no mane. Frezier also says, that the animals called lions in America are very different from those of Africa; that they avoid the fight of man, and commit no havock but among the cattle; and he farther remarks that their heads bear a strong resemblance to the heads of both the wolf and the tiger, and have tails shorter than that of either. In relations more recent, we are told Xx that VOL. VI.

that the lions of America by no means resemble those of Africa; that they have neither their fize nor fierceness; that in colour they are neither red nor yellow, but grey; that they have no mane, and that they have a custom of climbing up trees. Differing, then, from the lion in size, colour, form of the head, length of the tail, want of the mane, and lastly, in natural habits, no longer ought the Puma of America to be consounded with the real lion of Africa or of Asia.

Though this noble animal inhabits only the the hottest regions, yet he will live, and, with care, might even breed in temperate ones Gefner mentions that lions were brought forth in the menagerie of Florence; and Willoughby tells us, that at Naples, a lioness which had been confined with a lion, produced five whelps at one litter. Such examples are rare, but if true, they prove that lions are not absolutely averse to mild climates. At present there are none of them in the fouthern parts of Europe; so early as the days of Homer, there were no lions in Peloponnesus, yet they existed in Thrace, Macedon, and Theffaly, in the time of Aristotle. It is, therefore, evident that in all ages, they have given the preference to the hottest climates; that they seldom resided in temperate

temperate ones, and never in the frozen regions of the north. The naturalists above quoted, though they mention lions being brought forth. in Florence and Naples, are filent as to the time of gestation in the lioness, the fize of the young, when whelped, and the degrees of their growth. Ælian fays the goes only two months. while Philostratus and Edward Wotten affirm it to be fix. I think the latter opinion is nearest the truth, because the lion is an animal of great magnitude, and in general the time of gestation is longer among the large than the fmall species. Thus it is also with the growth of the body. Both ancients and moderns allow that the new-born lion is not bigger than the weafel, that is from fix to feven inches long; if so, several years must elapse before he can increase to eight or nine feet. It is also said that they cannot walk before they are two months old. But, without giving entire credit to these affertions, we may with probability presume, from the largeness of his size, that he is three or four years in acquiring his full growth, and that he consequently lives to about the age of twenty-five. The Sieur de St. Martin, mafter of the bull-fights at Paris, affures me that he has kept lions for fifteen or fixteen years, and that he does not believe they X x 2 live live above the age of tweny or twenty-two. But it must be evident the want of exercise, constraint, and irksomeness of situation to those which are in confinement, must impair health and shorten life.

In two different parts of his treatife on animals, Aristotle states that the lioness produces five or fix whelps at her first litter, four or five at the fecond, three or four at the third; two or three at the fourth, and one or two at the fifth. and after which the becomes barren. This affertion is ungrounded, fince in all animals the first and last litters are always the least numerous. This philosopher erred also, as well as all the naturalists who came after him, in maintaining that the lioness had but two nipples, it being a certain and well-known fact that she has four. He like wife afferts the lion, bear, and fox, are unformed at their birth; but it is now known that these animals are brought forth as perfect as any other, and that their members are all distinct and developed. That the lions copulate in a backward polition; but from a bare inspection it is demonstrable that he engenders in the same manner as other quadrupeds. I have noticed these errors in Aristotle, as the authority of fuch a great man has misled all the authors who have fince given the history of animals.

animals. His affertion also, that the neck of the lion contains but one rigid and inflexible bone, has been contradicted by experience; for in all quadrupeds, without exception, and even in man, the neck is composed of seven vertebræ; and it is also another certain fact, that in general carnivorous animals have a much shorter neck than granivorous, and especially than the ruminating ones. It is also stated by Aristotle, that the bones of lions have neither cavity nor marrow; that they are as hard as flint, and possess the property of striking fire by friction, but such errors ought not to have been repeated by Kolbe, nor handed down to posterity, fince even in the days of Aristotle, they were ridiculed by Epicurus.

The lion is at all times furious, is particularly fo when incited by defire. When in season a female will have eight or ten males in her train, who fight most bloody battles, till one of them becomes victorious over the rest. She brings forth in spring, and does not produce more than once a year, which also proves that she is employed for some months in tending and suckling her young, and consequently the time required for their first growth, while they are in need of the assistance of their dam, must at least be some months. In this animal all the passions,

even of the most gentle kind, are in excess-The attachment of the lioness to her young. is aftonishingly great; though naturally less ftrong and courageous than the lion, she becomes terrible when she has young. She then makes her incursions without fear; attacks indiscriminately men and animals, destroys without distinction, loads herself with the spoil, and carries it home to her whelps, whom she accustoms betimes to blood and slaughter. She usually brings forth in the most retired and inaccessible places, and when afraid of having her retreat discovered, she hides her tracks, by traverfing back the ground, or brushing them out with her tail. She fometimes also, when her apprehensions are great, transports them to a different place, and if obstructed, she defends them with a determined fury, and fights to the last extremity.

It is afferted that the lion is not possessed of either the sense of smelling or seeing in such persection as most other animals of prey; a strong light incommodes him, so that he seldom goes abroad in the middle of the day, but commits all his ravages in the night; and when a fire is kindled near a herd, he never approaches them. His smell is also so faulty, that he hunts by the eye only. A species of

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lynx, which has a piercing eye and acute smell, has indeed procured the name of the lion's guide, or provider, and it is said, that he always accompanies, or precedes the lion, to direct him to his prey. This is a small weak animal, and sometimes follows the lion, but who would most probably avoid him, but that he frequently comes in for a share of that spoil which the lion leaves.

The lion, when hungry, boldly attacks all animals that come in his way; but as he is very formidable, and they all feek to avoid him, he is often obliged to conceal himself for an opportunity of taking them by furprife. This he does by couching upon his belly in fome thicket, where he patiently waits the approach of his prey, and which he fprings at with fuch force as often to feize it the first bound; but if in the end his prey escapes, he stands motionless, and seems hurt at the disappointment. In the deferts and forests gazelles and monkeys are his common food; the latter, however, he only takes when upon the ground, as he cannot climb trees like the tiger or puma. He devours as much at once as will ferve him for two or three days. His teeth are fo strong that he easily breaks the bones and swallows them with the flesh. He is faid to be capable of supporting hunger for a long time, boss

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time, but from the heat of his temperament he is very thirsty, and drinks as often as he can meet with water, which he laps like a dog. but with his tongue bent downwards. He requires about fifteen pounds of raw flesh every day; he prefers that of living animals, particularly of those he kills himself; he seldom devours putrid carcaffes, and chooses rather to hunt for fresh spoil than to return to what he had left on a former day. Though he usually feeds upon fresh provisions his breath is very offensive, and his urine insupportable.

The roaring of the lion is so loud, that when uttered in the night, and re-echoed by the mountains, it refembles thunder. This roar is his natural note, for when enraged he has a short and quickly re-iterated growl; but the roar is a long, deep, hollow cry, which he fends forth five or fix times a day, or oftener before rains. His cry of anger is much louder, and still more terrible. He then beats his fides and the earth with his tail, erects his mane, puts the skin of his face, muscles, and eyebrows, in motion, shews his tremendous teeth, thrusts out his tongue, which is covered with sharp hard points, and extends his deadly claws. He is much stronger in the head, jaws, and fore-legs, than in any of his hind parts. He sees better in the night than day, and

and though his fleep is fhort, and he is easily awakened, yet there is no foundation for the affertion that he fleeps with his eyes open.

The usual pace of the lion is bold, folemn, and flow, though always oblique. When in chace he rather bounds than runs, and his motions are so precipitate, that he cannot stop of a fudden, but generally furpaffes his intention. When he darts on his prey he leaps the diftance of twelve or fifteen feet, feizes it with his fore-feet, tears it with his paws, and then devours it with his teeth. While young and active he lives by the chace, and feldom quits the deferts or the forests, where he finds a fufficiency of wild animals for his purpose; but when he grows old, heavy, and less qualified for exercise, he approaches frequented places, and becomes a more dangerous enemy to man and domestic animals. It is observed, however, that when he fees men and animals together he attacks the latter, and never the former, unless he is struck; in which case, always diftinguishing from whom the blow came, he quits his prey to take revenge for the injury. He is faid to prefer the flesh of the camel to that of any other animal; he is also exceedingly fond of young elephants, which, from their inability to refist until their tusks are grown, he eafily dispatches, when unprotected VOL. VI. Yv

by their mothers, nor are there any animals able to resist the lion but the elephant, rhino-ceros, tiger, and hippopotamus.

However powerful this animal may be, it is not uncommon for large dogs, supported by men on horseback, to chace, dislodge, and force him to retire; but it is necessary for both dogs and horses to have been well disciplined, as animals tremble and fly at the very fmell of the lion. Though his skin is firm and compact it is not proof against a ball, or even a javelin; yet he is feldom dispatched with one blow. He is often taken like wolves, by flightly covering over a pit, and fastening a live animal thereon. When thus entrapped all his fury fubfides, and if advantage is taken of the first moments of his surprise and shame, he may be chained, muzzled, and conducted any where without refisfance.

The flesh of the lion is of a strong and disagreeable flavour, yet the Negroes and Indians do not dislike it, and frequently make it part of their food. The skin, formerly the tunic of heroes, serves these people for a mantle; they likewise preserve the grease, which is of a penetrating quality, and is of some use in medicine.

END OF THE SIXTH VOLUME.

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